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THE FEASIBILITY OF AN INDUSTRIAL ESTATE IN MINDANAO, WITH SPECIAL REFERENCE TO DAVAO CITY

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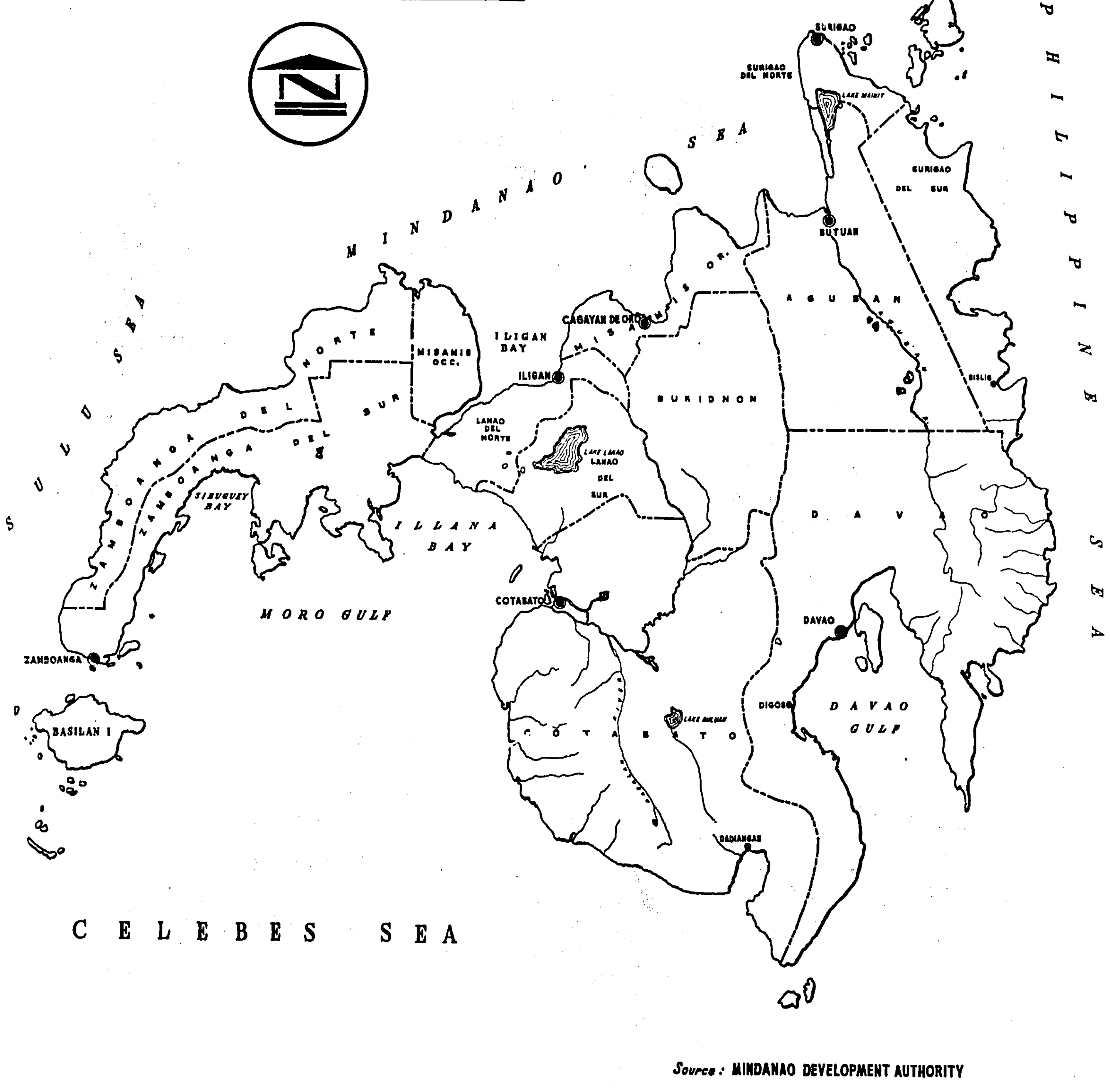
OUTLINE MAP OF MINDANAO AND ADJACENT ISLANDS, INCLUDING BASILAN

MINDANAO ISLAND



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CONTENTS

I INTRODUCTION 1

II SUMMARY AND CONCLUSIONS 5

III THE DEVELOPMENT OF INDUSTRY IN MINDANAO 11

Mindanao, An Under-industrialized Economy 13
Future Prospects for Mindanao 16
Distribution of Manufacturing in Mindanao 20
Population Prospects in Mindanao Cities 20
Iligan City 24
Cagayan de Oro 26
Zamboanga City 28

IV DAVAO CITY AS A LOCATION OF THE INDUSTRIAL ESTATE 31

The Social Infrastructure 32
The Physical Infrastructure 33

V PROJECTION OF THE DEMAND FOR FACTORY SPACE 41

Relocation of Existing Establishments 48
Industrial Survey of Metropolitan Manila 52
Projection of Establishments by Size of Employment 55

VI LOCATIONS SUITABLE FOR THE INDUSTRIAL ESTATE 61

Criteria for Selection 61
Evaluation and Recommendations 65

VII AN INDUSTRIAL ESTATE PLAN FOR DAVAO CITY 67

Phasing of Development 67
Lot Size Requirements 69
Layout and Site Plan 72
Employment Density 74
Street System 76

CONTENTS

VII Continued

Water Supply and Distribution 78
Electric Power Supply and Distribution 79
Site Development 81
Industrial Buildings 83
Other Physical Facilities 86

VIII FINANCIAL FEASIBILITY 89

Land Cost 89
Development Costs 90
Annual Operating Costs 92
Building Costs 95
Rental Income Requirement 96
Financing 101
Competitive Rental Rates 105
Summary 106

IX IMPLEMENTATION AND MANAGEMENT 109

Sponsorship of the Industrial Estate 109
Land Acquisition 110
Sale and Leasing Policy 111
Building Construction Policy 112
Disposition of Facilities on the Estate 113
Management Organization 115
Steps in Project Implementation 117

X SOME STRATEGIC CONSIDERATIONS OF INDUSTRIAL ESTATE DEVELOPMENT PROPOSAL FOR AN INDUSTRIAL COMPLEX IN DAVAO CITY 121

Restriction on the Selection of Applicants 121
Structure of Davao Industry 122
Implementing the Conception of an Industrial Complex . . . 123
Strategy in Industrializing Mindanao 126

CONTENTS

APPENDIX A MISCELLANEOUS TABLES 129

APPENDIX B SAMPLE DEVELOPMENT STANDARDS AND RESTRICTIONS . . . 137

APPENDIX C QUESTIONNAIRE, INDUSTRIAL SURVEY OF DAVAO CITY . . . 145

APPENDIX D QUESTIONNAIRE, INDUSTRIAL SURVEY OF METROPOLITAN MANILA 153

APPENDIX E PRIVATE BUILDING CONSTRUCTION ACTIVITIES, BY NUMBER OF PERMITS AND VALUE, DAVAO CITY, ILIGAN, AND CAGAYAN DE ORO, 1960-63 159

APPENDIX F INDUSTRIAL RELEASE FORM 163

ILLUSTRATIONS

Figure		Page
1	Map of the Davao City Area	8
2	Suggested Layout and Site Plan, Davao City Industrial Estate	62
3	Design of Street Sections, Davao City Industrial Estate	77
4	Suggested Multi-Unit Industrial Buildings, Davao City Industrial Estate	84
5	Multi-Unit Industrial Buildings, Suggested Site Utilization, Davao City Industrial Estate	85
6	Davao City Industrial Estate Corporation	116

Previous Page Blank

TABLES

Number		Page
I	Number of Workers in Manufacturing Establishments by Geographic Regions and Selected Provinces, 1960	14
II	Family Income by Regions of the Philippines, 1961	15
III	Projection of Manufacturing Employment in Mindanao and Sulu Based on Two Assumptions: I. Constant Proportion of Labor Force; and II. Constant Proportion of Nonagricultural Labor Force, 1963-1980	17
IV	Projection of Manufacturing Employment in the Philippines Based on Two Assumptions: I. Constant Proportion of Labor Force; and II. Constant Proportion of Nonagricultural Labor Force, 1965-1980	18
V	Philippines Population, Manufacturing Employment per 1000 of Population, Total Persons Employed, and Manufacturing Employment	19
VI	Establishments and Employees in Enterprises of Five or More Workers Engaged in Manufacturing or Combined Manufacturing and Commercial Services, Provinces of Mindanao	21
VII	Population and Percentage of Philippine Population of Major Cities of Mindanao, 1948-1960, and Projections, 1960-1980	22
VIII	Davao Light and Power Company Industrial Rate Structure and Generating Capacity	35
IX	Population and Percentage of Philippine Population of Mindanao Region by Provinces, 1903-1960, and Projections, 1960-1980	44
X	Labor Force, Employment by Sectors, and Unemployed, Philippines, 1956-1963	46
XI	Projection of Davao City Manufacturing Employment and Number of Establishments Based on Two Assumptions: I. Constant Proportion of Labor Force; and II. Constant Proportion of Nonagricultural Labor Force, 1965-1980	49

Previous Page Blank

TABLES

Number		Page
XII	Interest Expressed by Firms in Establishing on an Industrial Estate, Davao City, Industrial Survey, October 1964 . . .	51
XIII	Plant Investments Projected by Manufacturing Companies in Metropolitan Manila, October 1964	54
XIV	Size Distribution of Davao City Manufacturing Establishments by Number of Employees, Projected to 1980 at Five-year Intervals	56
XV	Projection of New Manufacturing Establishments Originating in Davao City and in Davao Province Outside the City by Number of Workers per Establishment, 1965-1980	57
XVI	Projection of Number of Establishments on the Davao City Industrial Estate by Origin of Investment, Size of Unit, and Investment Periods, 1965-1980	58
XVII	Summary of Number of Establishments and Factory Space Required by Size of Unit and Investment Periods, Davao City, 1965-1980	59
XVIII	Number of Buildings Required, by Construction Units and Size of Establishments, Davao City Industrial Estate, 1965-1980	71
XIX	Proposed Davao City Industrial Estate Plan, Site Sizes and Distribution by Construction Units, 1965-1980	73
XX	Davao City Industrial Estate Site Land Uses by Construction Units, Industrial Estate, 1965-1980	75
XXI	Davao City Industrial Estate Estimated Water Supply Requirement by Construction Unit, Davao City, 1965-1980	80
XXII	Estimated Capital Costs for Land Acquisition and Development, South Bajada Site, Davao City Industrial Estate . .	91
XXIII	Estimated Cost of Streets and Drainage (Materials and Labor), Davao City Industrial Estate	93

TABLES

Number		Page
XXIV	Estimated Cost of Water Systems, by Construction Units, Materials and Labor, Davao City Industrial Estate . . .	94
XXV	Statement of Estimated Profit and Loss, Assuming Capitalization of ₱5,500,000 and Monthly Rental of ₱2.25 per Square Meter, Davao City Industrial Estate, 1965-1979 .	98
XXVI	Statement of Estimated Profit and Loss, Assuming Capitalization of ₱5,500,000 and Monthly Rental of ₱2.333 per Square Meter, Davao City Industrial Estate, 1965-1979 .	99
XXVII	Estimated Annual Costs of Land Acquisition, Development, and Buildings, Davao City Industrial Estate, 1965-1979	100
XXVIII	Financing and Taxation Alternatives, Davao City Industrial Estate	103
XXIX	Projected Cash Flow, 1965-1979, Davao City Industrial Estate	104
XXX	Population of the Philippines by Province and Region, Censuses of 1903-1960, and Medium Assumption Projection to 1975	131
XXXI	Number of Manufacturing Establishments and Employees, by Industry Group and Size of Employment, Mindanao Region, 1963 Census Survey	133
XXXII	Number of Manufacturing Establishments and Employees, by Industry Group and Size of Employment, Davao Province, 1963 Census Survey	134
XXXIII	Number of Manufacturing Establishments and Employees, by Industry Group and Size of Employment, Davao City, 1963 Census Survey	135
XXXIV	Size Distribution of Manufacturing Establishments and Employment by Number of Employees, Davao Province and Davao City, Census Survey of 1963, and Projection of Establishments Outside Davao City, 1965-1980	136
XXXV	Private Building Construction Activity, by Number of Permits and Value, Davao City, Iligan City, and Cagayan de Oro City, 1960-1963	161

I INTRODUCTION

As a part of its program for the development of the Mindanao region, the Mindanao Development Authority (MDA) contracted with Stanford Research Institute (SRI) to conduct feasibility studies designed to provide a sound basis for industrial development in the Mindanao region.* This study of the feasibility of establishing an industrial estate for small- and medium-scale industry on the island of Mindanao was conducted as a part of the program.

In approving the study, the MDA Board of Directors considered the scope in the following terms:

> The study would include: (1) the location of the city for the industrial estate; (2) a comparison of alternate sites for the estate considering public utility requirements, but not the actual site or planned layout of the estate; (3) an estimate of the land required for the estate projected ten to fifteen years into the future; (4) an identification of the types of industries, such as agricultural implements, furniture, or leather products, that might be suitable candidate industries for settlement on the industrial estate; (5) a projection of the number of establishments by size classification in terms of workers, and space requirements in terms of footage; (6) advice on the type of organization needed to establish the estate; and (7) general policies regarding implementation.

The study first went about the selection of an urban community on the island of Mindanao which would be most suitable for the establishment of an estate from the standpoint of the industrial growth potential of the city and the achievement of a high impact on the development of the industrial economy of Mindanao. The cities of Davao, Cagayan de Oro, Iligan, and Zamboanga were evaluated from this standpoint. They were selected after consultation and agreement with staff representatives from the MDA, the Program Implementation Agency, and the National Economic Council.

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* The Mindanao region includes the islands of Mindanao and Palawan and the Sulu Archipelago.

The second part of the study was concerned with the financial feasibility of establishing an industrial estate, the planning of its several features, and proposals for the implementation of the project.

An extensive field trip in these selected areas of Mindanao was undertaken to observe at first hand the stage of industrial development attained, to obtain the views and attitudes of local leaders toward industrial development and the industrial prospects of their communities, and to decide upon the city most suitable for the establishment of the first industrial estate. The city of Davao was selected as the most suitable location.

Two special surveys were conducted to support the analysis of project feasibility. One was a sample survey of manufacturing establishments in Davao City to determine, among other things, the interest of industrialists in locating existing or new plants on an industrial estate if it were established there (Appendix C, questionnaire used in Industrial Survey of Davao City). In addition, the survey elicited useful information on the land and factory space occupied, size of enterprises, rentals paid, property values, and characteristics of the industries in question, including suitability for locating on an industrial estate.

Having in mind the limited degree of industrial development in Mindanao, a special survey of industrial firms in Metropolitan Manila was conducted to ascertain the interest of these firms in establishing branch plants in Mindanao (Appendix D, questionnaire used in Industrial Survey of Metropolitan Manila). This study was considered necessary to ensure the feasibility of an industrial estate in Mindanao and for the creation of a strong industrial complex in the region as a base from which the prospects of more extensive industrialization could flourish in the future.

In making the feasibility study, several assumptions were necessarily made under which an industrial estate might be developed. In each case these are clearly set forth in the report.

This report identifies and assesses several tracts of land as the basis of the feasibility analysis, which should assist the MDA in making the final selection of the site. A typical layout design has been prepared; with some modification it could be adapted to any of the several tracts discussed. A site plan is presented which provides building areas suited to projected factory space requirements. It should be understood that before the industrial estate project can be implemented, the MDA will need to take additional steps to acquire a specific site and prepare a complete blueprint for its development. Only then can a final layout plan be prepared as a basis for development of the land. These additional steps in the process of implementation will require some modification of the cost figures and the financial analysis presented in this report.

The study of the feasibility of an industrial estate for Mindanao was approved by the Board of Directors after a special study had been conducted on industrial investment possibilities by members of the MDA staff in collaboration with Harry J. Robinson, Senior International Economist who was the Stanford Research Institute Project Manager. The SRI staff members immediately responsible for this study were Dr. William Bredo, Manager of the International Development Center of Stanford Research Institute, and Kent H. Hallawell, consultant on industrial estates.

In addition to providing valuable administrative assistance, Harry J. Robinson, from his broad knowledge of the MDA and its purposes and his extensive survey of the Mindanao Region, was able to help effectively in giving the study a meaningful focus besides contributing indispensable advice and assistance on the substance of the report, especially in connection with financial feasibility and implementation policy.

The MDA, at all levels, provided the closest cooperation and assistance to the SRI staff. The work had the benefit of general advice and assistance from Dominador J. Santos, Assistant General Manager for Program Implementation, who also participated in the field work in Davao City. Marcial O. Manalaysay, Assistant General Manager for Planning and Research, not only provided useful personal assistance but made available the resources of his staff.

Material professional assistance rendered by MDA staff, especially on infrastructural problems including costing, was provided by Enrique A. Abadesco, Chief, Technical Assistance Division, and by Benjamin Catbagan, Chief, Project Development Division. Mr. Abadesco also participated in the field work in Mindanao. Enrique L. Nava, Demographer, provided considerable assistance on population projections and information on historical population migrations with reference to Mindanao. Eva T. Villanueva, Statistical Survey Officer, helped substantially in providing statistical data essential for the analysis of industrial growth and development in Mindanao. Diosdado de Leon, Draftsman, drew the maps and charts used for this report.

A major portion of the surveys of industrialists in Davao City and in Metropolitan Manila was conducted by Pilar R. Magno, Financial Analyst, and Pilar H. Santiago, Market Analyst, and much credit is due them for their perseverance and the care they exercised in completing the surveys successfully.

The action of the Board of Directors of MDA in making available the resources of its staff and generally facilitating the work of the SRI team on this project is much appreciated. The administrative management of MDA assisted the team in every way in successfully coping with the various problems encountered in conducting the study and in the preparation of the report. Many others on the MDA staff gave willingly and generously of their help, and their efforts contributed materially toward making this study a success.

II SUMMARY AND CONCLUSIONS

This study examines the possibility of utilizing the concept of an industrial estate for the purpose of promoting the development of manufacturing industries on the island of Mindanao. The research project had a two-fold objective.

1. Selection of an urban center which would be most suitable for the location of an industrial estate.

2. A study of the economic feasibility of establishing an industrial estate in Mindanao.

Close attention was given to the cities of Cagayan de Oro, Iligan, Davao, and Zamboanga, based on the judgment that the city with the best prospects of supporting a viable industrial estate would be among these four.

Two special industrial surveys were carried out to develop and support the project. A survey of manufacturing establishments with ten or more workers was undertaken in Davao City to obtain vital information needed for physical and economic planning of the estate, including space presently occupied, rentals paid, value of properties, types of manufacturing activity, number of workers employed, and interest in relocation. The survey of 43 plants covered about 80 percent of the establishments in the size and suitability categories to which it was directed. It revealed significantly that 66 percent of the establishments in the small-industry category of 10 to 49 employees would be interested in establishing manufacturing facilities on an industrial estate, but about 85 percent of these firms were primarily interested in relocating their existing facilities. This conclusion was useful in estimating the future demand for space on the part of firms presently operating in Davao City, but it was assumed in this study that not all firms expressing interest would carry out their stated intentions.

In view of the small industrial base of Davao City, it was concluded that an early investment in branch plants by large corporations situated in Metropolitan Manila would be necessary to make an industrial estate in Mindanao economically feasible. Top executives of 52 Manila companies, mostly having 100 or more employees, were interviewed concerning their branch plant investment plans. This survey showed that 35 companies (70 percent) had plans for establishing 37 plants, of which all except two were planned for Mindanao. Specific interest in establishing a plant on an industrial estate was expressed in two-thirds of the cases.

The survey was also useful in obtaining management's views regarding the most suitable locations for their branch plants. Davao City and Iligan City were selected in 66 percent of the cases; interest in other locations in Mindanao was widely scattered. Management definitely had Davao City in mind as a location for one-half of all the proposed investments, and if an industrial estate were to be established there, 43 percent of the 35 investments presently under consideration could be expected to locate on the estate. The Manila survey thus provided strong endorsement of Davao City as the location of the industrial estate. An identical conclusion regarding the suitability of Davao City was reached by the survey team, based on a careful statistical analysis and field studies of the major cities. Davao City had the largest industrial base, the best developed infrastructure, and the greatest potential for the growth of small- and medium-scale industries.

It was concluded that migration into Mindanao would continue over the next fifteen years (1965-80), which is the period relevant to the establishment of the proposed industrial estate; but the migration would possibly be at a slightly lower rate than had prevailed in the 1948-60 period. On the other hand, the increase in the Philippine population is projected at an annual rate of 3.62 percent.

Within this framework, the Davao City population would be expected to grow at the annual rate of 4.72 percent, a rate surpassed by only the two much smaller cities of Iligan and Butuan. These are the only three cities in Mindanao in which the population is expected to increase at a rate faster than that of the nation as a whole. This high rate of population increase provides for a large future market, which should give a strong stimulus to the rapid development of industry. Thus, supported by an industrial estate, the attraction of industry to Davao City could be an important step in the industrialization of Mindanao.

Four suitable locations were considered for an industrial estate within the Davao City area itself. The limitation on the distance that the estate should be situated from the Poblacion, or downtown area, is of greatest importance. As a matter of principle in locating estates in industrially growing areas similar to Davao City, it is considered that a location of more than eight kilometers distance from the Poblacion might make the estate project infeasible, due to competitive factors and difficulties that could be anticipated in attracting occupants. Other important factors in considering alternate locations include accessibility to utility services, the National Highway, the Santa Ana and Sasa ports, and the airport.

A number of Davao City industries have recently relocated in the Bajada area along the National Highway between the Poblacion and the Sasa seaport (see Figure 1). Also, the survey of existing Davao City industries indicated that among those firms interested in moving to an industrial estate, this area received by far the greatest preference. The Bajada area, and specifically that portion south of the highway and adjacent to the sea, is regarded as the most desirable area for the estate when the major factors relevant to industrial estate location are taken into consideration. At this location, and under existing conditions, the estate could be expanded when desirable or necessary, to include larger industries requiring water frontage, such as industries based upon forest products.

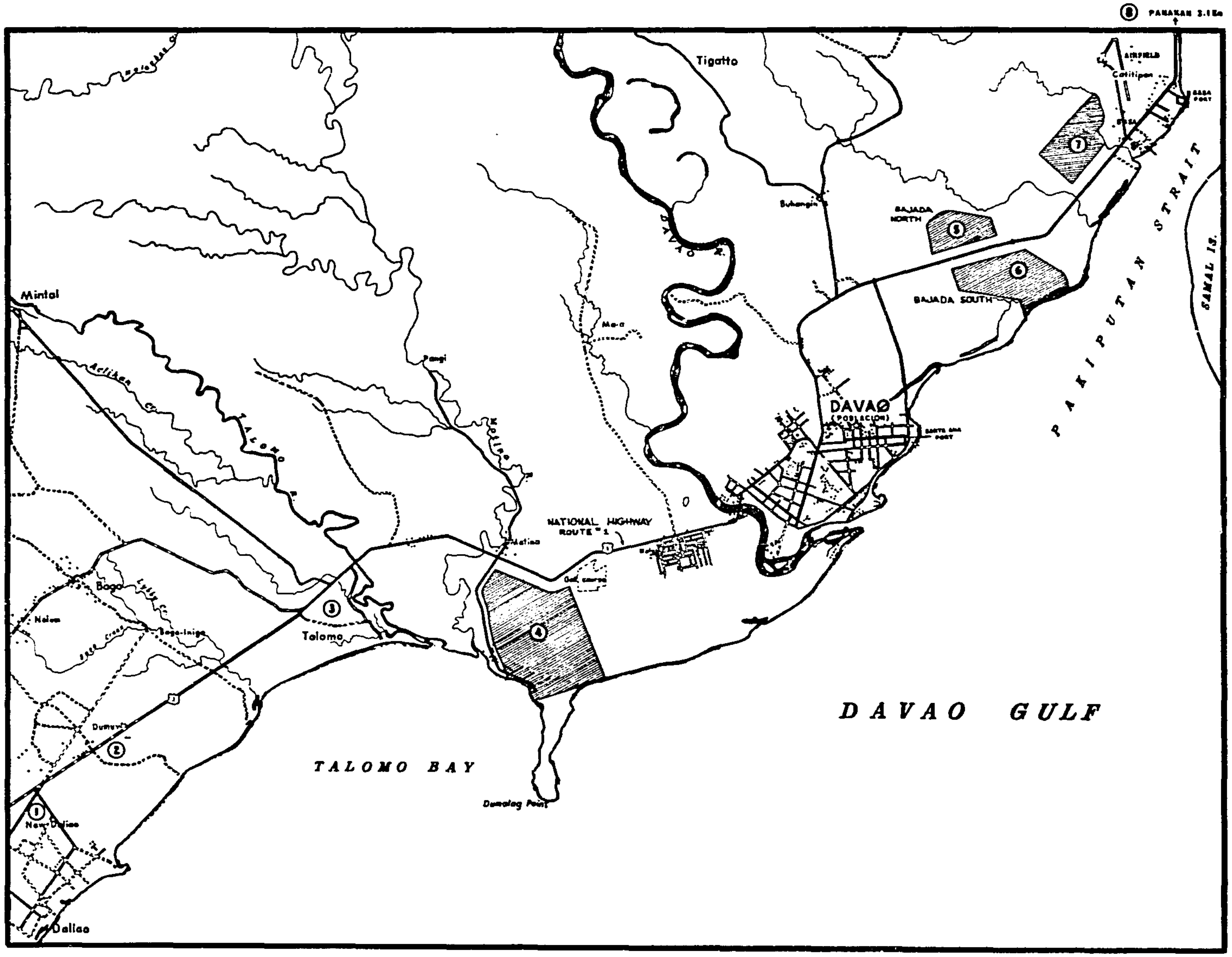
In order to establish a basis for cost estimates, a preliminary plan and layout for an industrial estate of 40 hectares (approximately 100 acres) has been considered. This plan is illustrated and described in detail in Section VII. The plan is adaptable to any of the more desirable estate locations and provides for a phased development in two units of construction.

An industrial estate situated at the suggested South Bajada site appears to have the best potential for development and occupancy over the fifteen-year period 1965-80. Assuming an initial capitalization of ₱5,500,000, a land cost of ₱8.00 per square meter, a 94 percent utilization of developable land, and a 96 percent occupancy of buildings, all of which appear to be reasonable under present development trends, the suggested monthly rental of ₱2.25 (₱27.00 per year) per square meter of factory space is regarded as the most desirable to consider. At this rental rate the projected net profit is estimated at 9.89 percent on the initial capitalization in the fifteenth year.

It is suggested in the report that the estate development be divided into two phases. The proposed initial capitalization of ₱5,500,000 covers the purchase of land, construction of the streets, and installation of utilities required in the initial 16.4 hectares of Unit I (first phase), as well as the construction of three industrial buildings. The proposed capital also includes the working capital for the first two years and provides a cushion to safeguard against unforeseeable contingencies. All further buildings and improvements will be financed by borrowing. It is estimated that 100 percent of building construction costs can be borrowed on the security of the total value of the estate properties. However,

FIGURE 1

MAP OF THE DAVAO CITY AREA



SOURCE: Stanford Research institute and Mindanao Development Authority.

should credit be restricted, the net profit may be used for such purposes during the initial years.

It is suggested that the original financing of the industrial estate be undertaken from the annual appropriated funds to the MDA, and that the estate be either a special operation of the Program Implementation Department of the MDA, or a subsidiary corporation. In the first instance the estate operation would not be subject to taxation. Should a subsidiary corporation be established at a later date when private capital could be attracted, the subsidiary would then have the special MDA tax-free exemption for a five-year period. Thereafter, each year for five years taxes will be increased at the rate of 20 percent of the normal tax. Were a subsidiary corporation established initially, the special tax exemption benefits would be applied during the years when marginal profits are to be expected. While another possible method of financing the estate might be through the sale of bonds, because of the high interest rates, bond financing is not considered desirable.

Operation of the Davao City Industrial Estate will require the careful administration of a staff skilled in property acquisition, promotion, development, and management. The purchase or optioning of a site for the estate should be the initial step for the MDA, and will require particular care to prevent local land speculation and inflated values. The estate staff should include a highly competent manager, and assistant managers for engineering and finance. A sales manager should be included on the staff when the marketing of the land and buildings becomes an important phase of development.

While a "lease-only" policy has been assumed for purposes of determining financial feasibility, considerable flexibility should be practiced in dealing with prospective occupants of the estate. The sale of land and buildings, installment purchases, and lease-purchase agreements should be parts of the estate development policy. The construction of factory space in individual buildings should be considered for the larger firms, and multi-unit buildings with movable partitions should be considered for smaller establishments. In all cases, high standards of building design and site utilization should be maintained to achieve the multiple purposes and benefits of industrial estate development.

In acquiring land for the Davao City Industrial Estate, it is suggested that to allow for the protection of the estate and possible expansion in the same area, a larger tract be obtained than the 40 hectares estimated to be required. Davao City should be encouraged to undertake a land use zoning program, especially focused on industrial zoning, simultaneously with the establishment of the estate.

The Mindanao Development Authority is advised to plan the estate as an eventual industrial complex designed to make an impact upon the Mindanao region. The South Bajada site would be especially well suited for this purpose, as it has both sea frontage and access to the National Highway. It is a site that should have all the locational advantages essential for attracting industries in all size classes. To make the project a success, it cannot be emphasized too strongly that the MDA must take a vigorous approach in seeking to attract medium- and large-scale industry from Metropolitan Manila if a strong industrial community is to be established.

Davao City should be a good site for industries to process local agricultural and forestry products. There should be an opportunity for fabricating and assembling agricultural implements and equipment. An effort should be made to develop a strong industrial underpinning by encouraging mechanical and engineering industries. With a large market in Davao Province and, hopefully, in the rest of Mindanao as the road system is developed to integrate the coastal cities, opportunities for investment in consumer goods industries should grow.

The Mindanao Development Authority should approach the industrial development of Mindanao on a phased basis, making investments for industrial estates and complexes as the industrial base expands in each of the major cities with growth potential, and as opportunities arise for exploiting mineral, power, and other natural resources of the region. The Davao City Industrial Estate is planned as the first project of such a development program.

III THE DEVELOPMENT OF INDUSTRY IN MINDANAO

The Mindanao Development Authority is concerned with the task of accelerating the growth of manufacturing industry in the Mindanao region. It has considered the potentials of the industrial estate as a tool for more effective promotion of industrialization. The idea of using the industrial estate as a means of attracting industry and increasing employment in specific areas originated in the United Kingdom during the depression of the 1930's. The efforts of Puerto Rico and India in using the industrial estate for attracting industry to underdeveloped regions have had the effect of spreading the use of the concept to many other industrially developing countries.

The features of the industrial estate overcome the handicaps under which manufacturing enterprises generally labor in industrially developing areas of an economy. The industrial estate is a planned approach for grouping of industrial enterprises, and it is from this fact that many of the advantages of such a project arise.

In contrast to the usual situation in which a new enterprise is entirely on its own in establishing and operating a business, the developer of the industrial estate shoulders many of the burdens and provides services for the entire community of enterprises which are to be established on the estate. Such assistance is of the greatest benefit to small- and medium-scale manufacturers who may be deficient in management and technical capabilities and who generally suffer from capital shortages. The estate developer performs services for them which he is in a better position to undertake. He can provide such immediate benefits to industrialists as:

1. Locating an advantageous site

2. Assembling land of different ownerships in order to make such sites available

3. Constructing access roads to main highways and building all-weather streets on the site

4. Installing the necessary utilities

5. Financing construction under easy terms, particularly if factory buildings are included

6. Saving time in starting production

The integration of all the components of an industrial estate requires a comprehensive layout for their location and the arrangement of lots for the establishment of factories, parking space, and landscaping. Factory buildings also may be provided in a complete package of industrial facilities; or special financial arrangements and technical assistance may be given for factory construction.

In addition to the integration of physical features, an industrial estate of high quality must assure future control of the physical environment to prevent a deterioration of property values. This is accomplished by industrial zoning to prevent intrusion of other types of activity, incorporation of adequate legal restrictions in deeds of sale or leases, arrangements for physical protection where this is needed, and provision for permanent management of the estate area to protect the interests of the tenants, the developer, and the community.

One of the initial considerations was the selection of the proper location for an industrial estate in Mindanao so as to produce the greatest industrial impact on the development of the region. With this object in mind, the research team was advised to give special attention to the cities of Cagayan de Oro, Iligan, Zamboanga, and Davao City, as these urban centers appeared to offer the greatest potential for industrial development. Statistical analyses of growth potential, discussed later in this report, were carried out to support findings in the field survey.

In addition to the question of locating an industrial estate, a more basic issue was whether there was any urban center in Mindanao which offered a sufficiently large base to support manufacturing industry and sufficiently good prospects to make it economically feasible as a location for an industrial estate.

It became evident very early in the study that Davao City would be the most suitable site to be studied for the establishment of an industrial estate. It was much more difficult to determine whether Davao City could support the development of an industrial estate of a size sufficient to permit achievement of economies of scale and a viable project from a financial point of view.

Mindanao, An Under-industrialized Economy

The industrial, commercial, and financial life of the Philippines is concentrated in Metropolitan Manila. Most of the vital decisions made by the private sector affecting industrial and commercial development are made there. The city is the hub of the import and export trade and the point from which most of the goods received from abroad are distributed throughout the islands. As shown in Table I, the 1960 census clearly emphasizes the concentration of industry in Metropolitan Manila. Of the 248,781 workers in manufacturing establishments of five or more laborers throughout the Philippines, 121,048 or 49 percent, were employed in Metropolitan Manila. The concentration of employees in large establishments, defined as those of 20 or more workers, was even higher--51 percent of the total national employment of 199,094 fall in this category. The proportion of the number of industrial establishments in Manila with 20 or more workers (1,016) was even larger, being about 54 percent of the 1,884 enterprises in this category in the country.

Income and expenditure surveys of Philippine households show clearly the disparity of income levels which prevails between the capital city and other urban centers of the country. The survey by regions in 1961 indicates (Table II) that the median income per family in Manila was nearly triple that of the national median--₱3,004 compared with ₱1,105. Southwestern Mindanao had a median family income of ₱1,147, which was closer to the national median, whereas Northeastern Mindanao was nearly 25 percent lower.

As may be expected, the income disparities between Manila and the rural areas of the country are even greater. These disparities are characteristic of the dual economy problem, which is not unique in the Philippines but exists in many developing countries.

The correction of such imbalances in percapita incomes and levels of living was one of the major purposes for the creation of the Mindanao Development Authority. A variety of programs including the development and expansion of agriculture, forestry, mining, and industry are surely necessary. The establishment of an industrial estate may be considered one program to provide manufacturing employment for the annual additions to the work force brought about by growth in population, by workers migrating to Mindanao, and by those who will be released from agricultural employment as more efficient labor-saving methods are adopted.

Table I

NUMBER OF WORKERS IN MANUFACTURING ESTABLISHMENTS BY GEOGRAPHIC REGIONS AND SELECTED PROVINCES--1960

	Number of Establishments		Number of Workers in Establishments Having	
	20 Workers and Over[a]	5 Workers and Over[b]	20 Workers and Over[a]	5 Workers and Over[b]
Philippines	1,884	7,221	199,094	248,781[b]
Metropolitan Manila	1,016	2,830	101,645	121,048
Outside Metropolitan Manila	868	4,391	97,449	127,733
Central Luzon	143		12,237	
Bulacan[c]	84		4,110	
Southern Luzon	354[d]		40,281[d]	
Western Visayas	82		18,171	
Negros Occidental Province[c]	42		10,294	
Eastern Visayas	119		7,762	
Cebu Province[c]	97		4,549	
Southwestern Mindanao	57		4,254	
Davao Province[c]	27		1,273	
Northeastern Mindanao	54		9,907	
Agusan Province[c]	18		1,209	
Other areas	59		4,837	

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a. Bureau of the Census and Statistics, Annual Survey of Manufactures: 1960, Table 3, pp. 236-241.

b. Ibid., Table 1, pp. 19-23.

c. Not included in total.

d. Including suburbs of Manila these totals are 912 establishments and 97,022 workers, most of them located in Rizal Province.

Table II

FAMILY INCOME BY REGIONS OF THE PHILIPPINES--1961
(Pesos per Year)

Regions	Median Family Income
Manila and suburbs	₱3,004
Ilocos and Mountain Provinces	918
Cagayan Valley and Batangas	813
Central Luzon	1,264
Southern Luzon and Islands	1,486
Bicol and Masbate	936
Western Visayas	1,009
Eastern Visayas	824
Southwestern Mindanao and Sulu	1,147
Northeastern Mindanao	842
National median income	1,105

Source: Bureau of the Census and Statistics, Surveys Division, Philippine Statistical Survey of Households, Bulletin Series No. 14, January 1964, Manila, Philippines.

Future Prospects for Mindanao

Since the Census of 1903, population data show a continuous trend of migration to Mindanao from other areas of the Philippines. This migration was accelerated in the years following World War II. In considering Mindanao as a place in which to invest, especially in the manufacture of consumer goods, the critical question posed is the rate at which the expansion of the population and the economy might be expected to continue. This question is discussed in detail in Section V. However, the main conclusion, as far as population prospects are concerned, is that the future may be viewed with optimism. It does not appear likely that the growth of Mindanao can continue at the annual rate of 5.2 percent compounded set in the 1948-60 intercensal period. The large influx of population may have been at a peak between 1951-59; but the migration continues, and many of the forces tending to encourage it still persist. The migrants constituted 30 percent of the population in 1960, the majority having come from the East and West Visayas. Whereas around 1940, Mindanao was populated by a proportionately large Moslem population, today Mindanao is predominantly Christian. The Moslem population is concentrated in Western Mindanao, largely in the Cotabato area and in adjacent provinces, including Sulu.

For the purpose of this study, the future rate of population growth in Mindanao (including Sulu) was projected at the annual rate of 4.79 percent (see Table III) for the twenty-year period 1960-80. It was based on a projection of the national population of 3.62 percent, as prepared by the Bureau of the Census and Statistics. The population of the Philippines is thus expected to grow from 27,088,000 to 54,937,000 over the 1960-80 period (see Table IV). It is estimated that Mindanao, growing more rapidly, will have 25 percent of the population by 1980 compared with approximately 20 percent of the 1960 population--a rise from 5,384,000 to 13,735,000 over the period (Table III). A population growth to this level is indicative of the prospects for a large regional market which should encourage, if other conditions remain favorable, industrial growth in Mindanao to serve the consumer requirements of the region. This would encourage a shift away from the present heavy reliance of the Mindanao economy upon the Manila industrial complex.

As indicated in Table V, the Mindanao economy has a much lower ratio of manufacturing activity than that prevailing in the Philippines as a whole or in most regions of the country. Manufacturing employment in 1962 provided 11 percent of the jobs created by all economic activity in the Philippines, compared to 7.74 percent of all jobs available from manufacturing in Mindanao. Only two other comparatively underdeveloped regions in Northern Luzon had lower employment rates in manufacturing. When

Table III

PROJECTION OF MANUFACTURING EMPLOYMENT IN MINDANAO AND SULU BASED ON TWO ASSUMPTIONS:
I. CONSTANT PROPORTION OF LABOR FORCE, AND
II. CONSTANT PROPORTION OF NONAGRICULTURAL LABOR FORCE, 1963-1980

							Growth Rate (percent)	
	1960	1963	1965	1970	1975	1980	1963-80	1965-80
Mindanao and Sulu								
Population (000's)[a]	5,384	6,195	6,547	8,359	10,700	13,735	4.79 %	5.1 %
Labor force (000's)	1,812	2,114	2,234	2,853	3,642	4,788		
Percent of population[b]	33.65%	34.13%	34.13%	34.13%	34.13%	34.13%		
Nonagricultural employment (000's)		335[c]	362	494	685	965	6.420	6.75
Percent of labor force		15.85%	16.20%	17.32%	18.81%	20.15%		
Assumption I: Constant proportion of labor force								
Manufacturing employment		24,140	25,510	32,580	41,600	54,680	4.9	5.2
Percent of labor force		11.42%	11.42%	11.42%	11.42%	11.42%		
Percent of nonagricultural employment		7.21%	7.05%	6.60%	6.07%	5.67%		
Assumption II: Constant proportion of agricultural labor force								
Manufacturing employment		24,140	26,100	35,620	49,390	69,580	6.420	6.754
Percent of nonagricultural employment		7.21%	7.21%	7.21%	7.21%	7.21%		
Percent of labor force		11.42%	11.68%	12.49%	13.56%	14.53%		

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a. The 1948-60 historic growth rate was 5.2 compounded annually.

b. Based on same proportions as used for the Philippines.

c. Regional trend (growth rate) was based on the trend projected for the Philippines using Census Survey results of October 1962.

Source: Stanford Research Institute.

Table IV

PROJECTION OF MANUFACTURING EMPLOYMENT IN THE PHILIPPINES BASED ON TWO ASSUMPTIONS:
I. CONSTANT PROPORTION OF LABOR FORCE, AND
II. CONSTANT PROPORTION OF NONAGRICULTURAL LABOR FORCE, 1965-1980

							Growth Rate (percent)	
	1960	1963	1965	1970	1975	1980	1960-80	1963-80
Philippines								
Population (000's)[a]	27,088	29,980	31,939	37,985	45,527	54,937	3.62%	3.62 %
Labor force (000's)	9,116[b]	10,233	10,900	12,980	15,550	18,750		
Percent of population	33.65%	34.13%	34.13%	34.13%	34.13%	34.13%		
Agricultural employment (000's)[c]	5,224	5,797	5,485	5,856	6,358	6,833		
Nonagricultural labor force (000's)	3,892	4,436	5,415	7,124	9,192	11,917	5.75	6.0
Percent of labor force	42.7%	43.3%	49.7%	54.9%	59.1%	63.6%		
Assumption I: Constant proportion of labor force								
Manufacturing employment (000's)	1,036	1,140	1,200	1,428	1,710	2,062	3.50	3.551
Percent of labor force	11.37%	11.14%	11.00%	11.00%	11.00%	11.00%		
Percent of nonagricultural labor force	26.6%	25.7%	22.2%	20.0%	18.6%	17.3%		
Assumption II: Constant proportion of nonagricultural labor force								
Manufacturing employment (000's)	1,036	1,140	1,354	1,781	2,298	2,979	4.75	5.85
Percent of nonagricultural labor force	26.6%	25.7%	25.0%	25.0%	25.0%	25.0%		
Percent of labor force	11.36%	11.14%	12.42%	13.72%	14.78%	15.89%		

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a. 1948-60 annual growth rate was 2.89 percent compounded. Projection for 1960-80 is based on the medium level assumption by the Bureau of Census and Statistics done for 1960-75.

b. Source: Program Implementation Agency.

c. Computations for 1965, 1970, 1975, and 1980 are respectively 105.0, 112.1, 121.7, and 130.8 percent of 1960, the trend based on the UN projection.

Source: Stanford Research Institute.

Table V

PHILIPPINES POPULATION, MANUFACTURING EMPLOYMENT PER 1,000 OF POPULATION, TOTAL PERSONS EMPLOYED, AND MANUFACTURING EMPLOYMENT

	Population, 1960 Census[a] (thousands)	Manufacturing Employment per 1,000 Population[b]	Total Persons Employed, October 1962[a]		Manufacturing Employment, October 1962[a]	
			Thousands of People	Percent of Philippines	Thousands of People	Percent of Philippines
Metropolitan Manila	1,139	135	709.8	7.48%	154.3	21.74%
Ilocos and Mountain Provinces	1,469	22	675.3	7.11	31.9	4.72
Cagayan Valley	1,035	8	484.1	5.10	8.1	1.67
Central Luzon	3,691	41	1,143.2	12.04	152.6	13.35
Southern Luzon	4,233	37	1,189.2	12.52	156.8	13.18
Bicol	2,364	42	807.9	8.51	99.4	12.30
Western Visayas	3,807	37	1,456.5	15.34	141.1	9.69
Eastern Visayas	3,966	48	1,628.6	17.15	192.1	11.80
Southwestern Mindanao	3,273	16	848.3	8.93	54.0	6.36
Northeastern Mindanao	2,111	26	552.0	5.81	54.4	9.86
Philippines total	27,088	39	9,494.9	100.00	1,044.7	11.00
Mindanao total	5,384	20	1,400.3	14.75	108.4	7.74

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a. Obtained from Bureau of the Census and Statistics, Republic of the Philippines, Manila.

b. Obtained as a quotient of manufacturing employment divided by the population.

related to the total population, the degree of industrialization is shown to be even lower comparatively in Mindanao. The ratio of manufacturing employment to the population for the Philippines as a whole was 39 per thousand compared to a ratio of 20 for Mindanao and 135 in Metropolitan Manila. With the exception of the Cagayan Valley region, according to this criterion, Mindanao as a whole is the most under-industrialized region in the Philippines.

Distribution of Manufacturing in Mindanao

The next question concerns the extent to which manufacturing is developed among the provinces of Mindanao. Table V shows that Northeastern Mindanao appeared to be more industrialized in terms of the proportion of manufacturing employment to the population, but this may be misleading. The majority of the population is concentrated in Southwestern Mindanao, and most of the manufacturing is concentrated in this part of the island.

The distribution of manufacturing establishments and employees among the provinces for all enterprises of five or more workers is shown in Table VI. According to the results of the Census Survey of 1963, there were 1,042 manufacturing establishments of this size employing 27,709 workers in Mindanao.

By far the heaviest concentrations of enterprises are shown to be in Davao and Cotabato Provinces, with Davao having much the higher employment. The majority of the enterprises in these provinces are located in Davao City and Cotabato City. The comparatively large manufacturing employment in Misamis Oriental is attributable to Cagayan de Oro City; similarly Iligan City has most of the industry in Lanao del Norte.

Population Prospects in Mindanao Cities

The population of the major cities of Mindanao was projected from 1960 to 1980 to: (1) assess the comparative growth potential of the cities; (2) evaluate the future market of the respective communities; and (3) estimate the growth potential of industry in the city chosen as the location for the industrial estate. The technique used to make the projections is described in Section V. The results are summarized in Table VII.

The population of Davao City is expected to grow at a faster rate than the population of the Philippines, rising from 0.83 to 1.03 percent of the national total between 1960 and 1980. The city should continue

Table VI

ESTABLISHMENTS AND EMPLOYEES IN ENTERPRISES OF FIVE OR MORE WORKERS ENGAGED IN MANUFACTURING OR COMBINED MANUFACTURING AND COMMERCIAL SERVICES, PROVINCES OF MINDANAO

	Manufacturing		Commercial Services and Manufacturing	
Provinces	Establishments	Employees	Establishments	Employees
Agusan	71	2,173	81	2,301
Bukidnon	29	367	29	367
Cotabato	275	4,917	294	5,068
Davao	288	7,095	341	8,238
Lanao del Norte	71	3,447	80	3,509
Lanao del Sur	22	730	23	737
Misamis Oriental	79	4,009	93	4,165
Misamis Occidental	52	545	57	580
Zamboanga del Norte	32	537	32	537
Zamboanga del Sur	123	3,889	136	4,097
Mindanao, total	1,042	27,709	1,166	29,599

Source: Bureau of the Census and Statistics, Census Survey of 1963.

Table VII

POPULATION AND PERCENTAGE OF PHILIPPINE POPULATION OF MAJOR CITIES OF MINDANAO, 1948-1960, AND PROJECTIONS, 1960-1980

	1948	1960	1965	1970	1975	1980
Basilan City						
Population (000's)	110.3	155.7	178.9	197.5	218.5	242.5
Percent of Philippines	0.573%	0.575%	0.560%	0.520%	0.480%	0.441%
Butuan City						
Population (000's)	31.6	82.5	103.8	144.3	204.9	288.5
Percent of Philippines	0.164%	0.305%	0.325%	0.380%	0.450%	0.525%
Cagayan de Oro City						
Population (000's)	46.3	68.3	79.8	95.0	113.8	137.3
Percent of Philippines	0.260%	0.252%	0.250%	0.250%	0.250%	0.250%
Cotabato City						
Population (000's)	20.4	37.5	44.4	54.3	66.9	82.2
Percent of Philippines	0.106%	0.138%	0.139%	0.143%	0.147%	0.150%
Davao City						
Population (000's)	111.3	225.7	255.51	345.7	441.6	567.8
Percent of Philippines	0.58%	0.83%	0.80%	0.91%	0.97%	1.03%
Iligan City						
Population (000's)	25.7	58.4	70.9	94.2	126.1	170.2
Percent of Philippines	0.134%	0.216%	0.222%	0.248%	0.277%	0.310%
Ozamis City						
Population (000's)	36.6	44.1	49.2	51.7	54.2	56.1
Percent of Philippines	0.190%	0.163%	0.154%	0.136%	0.119%	0.103%
Zamboanga City						
Population (000's)	103.3	131.5	146.9	155.7	157.1	177.5
Percent of Philippines	0.537%	0.485%	0.460%	0.410%	0.345%	0.323%

Source: Projections by Stanford Research Institute.

as the largest urban center with the greatest potential in Mindanao. The population should increase by about two and one-half times during this period. The growth from 225,700 to 567,800, reflects a large and growing market indicative of an environment that would encourage the growth of industry.

Two other cities are expected to grow faster than the national rate: Iligan City and Butuan City. Iligan City in Lanao del Norte Province is attracting much industry, due to the existence and availability of a great hydroelectric power potential, and an industrial base in the process of being established by heavy industry. Iligan City is approximately one-fourth the size of Davao City today, but its size is expected to triple between 1960 and 1980 (58,400 to 170,200), rising from 0.216 to 0.310 percent of the national population.

Butuan City in Agusan Province is the major base of the logging and plywood industry in Mindanao. Its historical growth above the national average is expected to continue in the 1960-80 period with a rise of from 0.305 to 0.525 percent of the Philippine population (from 82,500 to 288,500).

Basilan City and Zamboanga City are expected to show good-sized population increases, achieving 242,500 and 177,500 population levels, respectively. However, the rates of increase of these cities are not expected to rise as rapidly as the national growth rate.

Cagayan de Oro City is the site of most of the industry in Misamis Oriental Province. Projection of the population, according to historical trends would place the expected size of Cagayan de Oro City at 137,300 by 1980. It is believed, however, that this less-than-optimistic result may be due to errors in the 1948 and 1960 censuses, and that the city may grow at least as fast as the nation, which would have the effect of raising the 1980 projected population to 140,000.

The field work in the cities of Davao, Iligan, Cagayan de Oro, and Zamboanga helped to support the statistical conclusions. It was determined therefore, on the basis of evidence available, that Davao City is the urban community with the largest industrial base and with the greatest industrial potential, and that it is the most suitable location for an industrial estate in Mindanao today.

Iligan City

In 1948 Iligan was a small city of approximately 26,000, but it has rapidly become the prime location for very heavy power-using industries, and additional industries are being considered for establishment in the near future. Today the population is about 70,000 with prospective growth considerably in excess of the national level. The major basis for this growth has been development by the National Power Corporation of the hydroelectric power project at Maria Cristina Falls. The Maria Cristina Falls power project has an estimated potential of 200,000 kw of which 50,000 has been developed thus far. Facilities for the next 100,000 kw are presently under construction.

The franchised electric power distributor, the Iligan Light and Power Company, has a total capacity of about 1,000 kw, part of which is purchased from the National Power Corporation (NPC).

For about the first 85 kw of constant demand, the cost of power in Iligan is comparable to many other places in the Philippines, including Davao and some other cities in Mindanao. Above that point the rate structure falls off sharply, and very large consumers of power are in a position to take advantage of what is presently one of the lowest electricity costs to be found in the Philippines. As additional power is developed at the Maria Cristina Falls and at other points along the Agus River, the Iligan area should become an increasingly attractive location for heavy industry.

The National Water and Sewerage Authority (NAWASA) provides water to the Poblacion and immediate surroundings. The water supply available from rivers and wells is abundant and of excellent quality. However, the NAWASA distribution system has failed to keep pace with the requirements of the expanding city population. As a result only a few industries can be provided with water by NAWASA, while a few are served by the NPC, and many businesses and residences have their own wells. There is no sewage disposal system in Iligan City or in the Province of Lanao del Norte.

Notwithstanding its rapid growth, Iligan City still has a very small industrial base. In 1963 it had only 36 manufacturing firms, and 25 of these had five to nine employees; only 11 had 10 or more employees. Approximately 12 of these small enterprises were bakeries and tailoring shops. Five enterprises were very large and important industries, having located in Iligan over the past ten years. They form the nucleus of a heavy industry base that appears to promise considerable future expansion. Four of these plants have a combined peak power demand of about 37,500 kw. In 1957 these plants accounted for 25 percent of the manufacturing employment in Iligan City and the province. Today, they employ over 1,200 persons. Brief descriptions of the five large plants follow.

Marcelo Steel Corporation, Fertilizer Division

This plant was the first to be tied to the Maria Cristina project. It was established by the government and was later sold to the Marcelo Corporation. The plant produces ammonium sulphate fertilizer and intermediate products including hydrogen, nitrogen, oxygen, and ammonium. The company plans to expand into the manufacture of sulphuric acid in a new plant to be constructed on the present site within two years.

The National Shipyards and Steel Corporation

This is a government-owned steel mill for the conversion of scrap and ingots into rods, bars, and other steel products for construction and machinery. The existing plants and the 144-acre site are expected to be sold to the Jacinto Steel Company in 1965 for conversion to an integrated steel-making facility with an estimated total cost of over one billion pesos.

Maria Cristina Chemical Industries

This is a plant for the production of carbide and ferro-alloys. The company is presently doubling the capacity of its 4,500 kw electric furnace.

Pillsbury Mindanao Flour Mills

This flour mill has a storage plant with six giant elevators and a daily capacity for milling 265 tons of wheat into 8,000 bags of flour.

The Mindanao Portland Cement Company

This was the first cement manufacturing plant constructed in Mindanao. Structurally the plant is completed, but technical difficulties have kept it from going into operation. It has a capacity of 12,000 bags of cement per day.

A new enterprise presently under construction is the Mabuhay Rubber Corporation, which is designed to produce polyvinyl chloride for manufacturing plastic materials. The plant is dependent upon the raw materials produced by the adjacent carbide plant. This integration illustrates the kind of linkage that is developing as one local industry produces finished products used as raw materials for another. Further integration should be achieved such as through the establishment of plastic moulding and extruding enterprises in Iligan. Another example of integration is the production of oxygen for use in the fertilizer and the carbide plants.

Thus the industrial structure of Iligan differs in the sense that it is top-heavy with large-scale enterprises. There would be a small market at present for space on an industrial estate designed for small- and medium-sized firms.

There is an apparent shortage of suitable industrial land situated close to the Poblacion area. Suitable large sites for heavy industry are available along the waterfront both to the northeast and the southwest of the Poblacion. When the market warrants the development of an industrial estate, it would be well to consider land in the area between the Poblacion and the river, where a large and flat parcel, presently devoted to agriculture, is available.

Iligan City has an inadequate public port at the present time. The best location for a port would be in the area of the flour mill, which has its own pier. The proposed integrated steel mill projected for Iligan is scheduled to construct a new 250-meter private pier.

The Iligan airport is poorly located halfway to Marawi; it is at an elevation of over 1,000 meters and is sometimes closed due to weather conditions.

The community facilities of Iligan City require further development. While wholesaling and retailing facilities appear to be adequate, the restaurant situation needs improvement. Two modest hotels are available with some air-conditioned rooms.

Cagayan de Oro

Cagayan de Oro City has an estimated 1964 population of about 80,000, and future growth rate prospects are more modest than those of Iligan City. Historically, it has grown more slowly. Assuming a more optimistic growth rate than experienced between 1948-60, say growth at the national rate, a projection of about 137,300 people by 1980 results.

Cagayan de Oro City has a relatively small industrial base which has not had the benefit, as has Iligan City, of a large amount of power as an inducement to industry to establish additional plants. In 1963 the city had 69 manufacturing firms with five or more workers, 51 having only five to nine workers. About 30 of the 51 were small bakeries and tailoring shops. Manufacturing employed 6,814 persons in the province of Misamis Oriental and most of these were in Cagayan de Oro City. Approximately 2,200 of these workers or almost one-third, were employed by the Philippine Packing Corporation, in its food processing and tin can manufacturing plants at Bugo.

Other important industrial employers include the San Miguel Corporation (with its Coca Cola plant) and the Roa Enterprises Saw Mill. Several new locally-sponsored industries in the medium-sized group include the Cagayan de Oro Industries (coffee processing), Orobilt Incorporated (wood products) and Superior Engineering (machine group). It has recently been reported that consideration is being given to the relocation of a saw mill from Davao to Cagayan de Oro City. Also, the proposed establishment of a large cement plant about 30 miles east of the Poblacion is being considered by a subsidiary of Ayala y Compania.

Electric power is provided for the city and its immediate environs by the Cagayan Electric and Power Company. Power is secured chiefly from the National Power Corporation's Agusan River Plant in Bukidnon Province which has a rated capacity of 1,900 kw. An additional 600 kw is provided by company-owned diesel units in Cagayan de Oro City. The franchised power company serves most of the manufacturing enterprises and over 3,000 residential users in and around the city. While its present capacity exceeds the peak demand, there are plans for expansion of both diesel and hydroelectric sources, and the company is planning to buy a 350-kw diesel unit from the Philippine Packing Corporation when the latter completes its projected steam plant.

The future plans of the electric power company and the community have been based on the assumption of the early construction of the 10,000-kw transmission line from the Maria Cristina Falls project in Iligan. This line was originally scheduled for completion in 1963 but has been delayed for various reasons. It is of critical importance for the industrial development of Cagayan de Oro.

The water supply for the Poblacion and adjacent areas is provided by NAWASA. The present supply capacity of 1,200 gallons per minute is insufficient for the growing population and residential expansion. It has been proposed that the Bubunawan River, a tributary of the Cagayan River, be tapped as a gravity-flow source. It is expected that the project will be feasible if it can utilize 10 percent of the average available flow, yielding about 18,000 gallons per minute. The project would cost about ₱6 million, but there is no present funding in sight. No public sewage disposal system exists in the city or the province.

Suitable tracts of industrial land are available in Cagayan de Oro City in a variety of site sizes and locations. There is no readily identifiable industrial district in the city. Existing businesses are spread over an area stretching from west of the Cagayan River for approximately 20 kilometers to Bugo at the eastern end of the city. A small concentration of industry appears to be forming around the port, and this is the area that the City Planning Board has proposed for a major industrial district; there is space for about 100 hectares for future development in this area.

The Cagayan de Oro City government operates under an able administration, and a number of steps have been taken to encourage industry to settle in the area. One is a tax incentive system approved by the City Council which gives new industry coming to the city tax-exemption benefits on a progressively declining scale over a period of years. The formation of a City Planning Board in December 1963 is another development reflecting the intention to develop the community in an orderly way. A dynamic group of civic-minded leaders has promoted the development of specific industrial projects, the expansion of hospital facilities, and the beautification of the city. The city is proud of its law and order record which is reported to be one of the most favorable in the Philippines.

Xavier University at Cagayan de Oro is exerting a very beneficial effect on the life of the community. Another combined college and vocational school is also a great asset for providing trained people for industry. Mindanao State University is located at nearby Marawi. Two hotels in the city provide several air-conditioned rooms. Public restaurant facilities are modest in scope.

Zamboanga City

Zamboanga City is the oldest of Mindanao's major communities, and is still an important seaport and trading center. Its early rapid growth rate slowed to 2.0 percent between 1948 and 1960, when the population reached a total of 131,500.

The major industrial establishments in the city are three plywood mills, a chip board plant, a coconut oil processing plant, and a shipyard. There are also a large number of small manufacturers of wood and food products, mostly for local consumption.

Electric power is a major limiting factor for industrial expansion. The Zamboanga City Electric Light System, a division of the municipal government, is the franchised electric power distributor. The total system power capacity is rated at 2,133 kw, with 200 kw coming from hydroelectric sources and 1,933 kw from diesel generating plants. The peak power demand is presently close to the maximum power capacity. Most industries have their own units for generating electricity.

The port of Zamboanga City is one of Mindanao's best developed and maintained. The port can now accommodate one foreign and one inter-island vessel on the main wharf at the end of a major pier. Finger piers accommodate numerous smaller boats. A sum of ₱2,000,000 has been authorized for the construction of a parallel pier and the lengthening of the wharf to connect the two piers. This will double the ship handling capacity and provide for one-way traffic on each pier.

Zamboanga City has an excellent water supply system emanating from the Tumaga River, and a relatively adequate distribution system. The major assets of the city are its attractive buildings, parks, streets, and public and private institutions. Zamboanga City has the appearance of a mature community and, with its established traditions and culture, should become a center for the tourist industry.

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IV DAVAO CITY AS A LOCATION OF THE INDUSTRIAL ESTATE

Davao City is said to have the largest area of any "city" in the world, and it is probably unique among the cities of the world in having unexplored areas within its borders. The population today is approximately 256,000. As noted earlier, it is growing rapidly and is projected to reach 567,750 by 1980, assuming an annual rate of growth of 4.72, which approximates the growth projected for Mindanao.

Davao Province provides the major effective hinterlands of Davao City today. The province's present estimated population of about 1,075,000 will nearly triple if the projected population of 2,956,000 is reached by 1980.* The growth rate may be expected to exceed that of Davao City, as growth is projected at the annual rate of 6.17 percent.

Most of the urban population of the province lives along the national highway running south and north from Davao City. A significant concentration of population occurs 75 kilometers to the south around Digos, Malalag, and Sulop. Some barrio concentrations extend north to Panabo about 25 kilometers away. This scattered, and to some degree urbanized, area includes a population at least double that of the city at the present time. It may be expected that the concentration of population in this area will increase rapidly as the population of the city grows. The industry of Davao City should derive considerable stimulation from this market, which should reach about a million people by 1980.

In addition, Davao City has the large nearby hinterland of intensive agriculture in the Davao River valley and the logging operations in the forests. Also the interiors of Bukidnon and Agusan provinces to the north and west are developing rapidly. If all-weather hard-surfaced roads could be developed to connect Davao City to other major cities (particularly Cotabato, Butuan, Bislig, and General Santos), Davao City could be the port of entry for a large proportion of the goods required by these cities from abroad and, to some extent, from the manufacturing centers of the Philippines. Even more important, these cities would be opened as a market to the manufacturing industries of Davao City which should stimulate markedly the production of consumer goods and capital goods.

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* See Table IX of this report.

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The Social Infrastructure

Though Davao City has the largest number of industrial establishments and employees on the island of Mindanao, the industrial base is comparatively small. This is especially noticeable when one does not take into consideration small enterprises employing five to nine workers. According to the 1963 Census there were only 53 establishments that employed 10 or more workers. On the other hand, many of the services of the community are quite well developed. This may be explained by the fact that most of the goods required by Davao City and the hinterland are shipped from other parts of the Philippines or from abroad. These imports have discouraged the establishment of a larger industrial base, but they have encouraged the establishment of numerous retailing and wholesaling facilities. Many of the wholesale concerns are branches of Manila firms, and some are joint local-foreign enterprises. Conceivably many of these firms could establish assembly and manufacturing operations when the market in the Davao area becomes sufficiently large to warrant such investment. Automobile repair facilities appear to be adequate, but other mechanical and engineering services required by industries may need further development.

A community in which an industrial complex is to be established must give special attention to the amenities and services demanded by the management and supervisory staffs of new industrial enterprises. The community should be sufficiently attractive for executives who may be used to more attractive facilities and services. There is not sufficient housing of this type in Davao City to accommodate satisfactorily any rapid influx of highly salaried executives. However, the housing construction industry is well developed and it should be possible to provide adequate housing when needed.

Hotel accommodations of a high standard are also essential to accommodate visiting executives, professionals, and salesmen associated with the establishment and operation of such an industrial development. Davao City has luxury accommodations available at the Davao Insular Hotel, which is located eight kilometers from the Poblacion and within three kilometers of the airport. The Apo View Hotel provides good accommodations in the commercial area of the city. The accommodations at these hotels should be adequate for some time. Restaurants are available at these hotels and in a number of other locations throughout the city. The schools of the city have high standards of excellence. In addition to the fine elementary and high schools, there are a number of private schools and colleges, including the Ateneo de Davao, and a vocational school. The colleges are graduating students in excess of the present needs of the community, and this excess could be available to manufacturing establishments planning to hire business and management staffs. Davao City should be able to supply many of the nontechnical workers required by industries likely to locate on the industrial estate.

There is no land use zoning program in Davao City. Consequently, industrial, commercial, and residential establishments are inter-mixed without any regulation. Cagayan de Oro City was the first community in Mindanao to establish a planning board late in 1963 to deal with this problem. The question of zoning is presently being discussed in Davao City, and some action may be taken by the City Council. Such a step would be most desirable for future development of both business and industry.

The city has grown very rapidly, and there has been a heavy population influx without adequate measures to provide for the increase. Many of the new arrivals move into low-standard squatter facilities, and large sections of the city today display this characteristic. Some of these squatter sections are slowly being transformed by the building of more permanent structures.

Some of the downtown commercial areas are heavily congested; crowded factories and slum tenements are housed in low-standard buildings, with the result that several disastrous fires have occurred. Some of these areas are being rebuilt with new and modern buildings. While Davao City is undergoing a process of transformation into a modern community with up-to-date facilities, the process may be expected to take a long time. The establishment of an industrial estate will considerably augment the employment opportunities of the community and should do much to assist in achieving an orderly transformation by concentrating manufacturing in an industrial zone separate from commercial and residential development.

The Physical Infrastructure

Electric Power

The Public Service Commission of the Republic of the Philippines has legal jurisdiction over all power generation involving the sale of electrical energy. Included in its functions are the approval of rates and the granting of franchises to private and public electric utility companies. Such a franchise for the generation and sale of electricity has been granted for the Davao City area to the Davao Light and Power Company, a publicly owned corporation.

Davao Light and Power Company's major source of electrical energy is situated along the national highway two kilometers north of the Poblacion, and is comprised of six diesel generating units with a total rated capacity of 10,400 kw. In addition, the company has a contract with the National Power Corporation for the purchase of 2,000 kw from the Talomo River hydroelectric project.

The power company serves residential, commercial, and industrial users. Included in its present service area are an estimated 190 industrial and heavy commercial customers having a power demand of over 5 kw each. Only one private enterprise in Davao City, the Davao Ramie Textile mill at Daliao, which was formerly owned by the Philippine Government, is served directly by the National Power Corporation.

The Davao Light and Power Company reports a very rapid growth in new customers and total power consumption during the past five years. Between the beginning of 1960 and October 1964 industrial business alone has increased by an estimated 60 percent. During this period the company has increased its generating capacity by more than 150 percent by adding two 3,150-kw diesel units, one of which is now in process of installation. Four more units of this size are projected to meet future demand during the next several years. The company is also studying the potentials for other sources of electric power.

Internal combustion generating facilities characteristically produce high-cost electricity despite the use of large power units and cheap, bunker-type fuels. Electric power in Davao is therefore quite expensive compared to certain cities served by hydroelectric sources, such as to be found in Iligan. The Davao rate structure is relatively attractive, however, when compared to the many other Mindanao cities relying on smaller diesel generating units. Davao also has the advantage of an available power supply in excess of current demand. The September 1964 peak demand on the Davao Light and Power Company was approximately 10,000 kw compared to its total diesel and hydroelectric rated capacity of 10,400 kw. The company's industrial rate structure and the composition of its generating capacity are shown in Table VIII.

Water Supply

The local branch of NAWASA provides a very limited water supply to the central area of Davao City only. The system is over 30 years old. It was designed for use by a much smaller population than the city now has, and there have been no major improvements or overhauls since its construction. There are two reservoirs, the Wireless and the Matina,

Table VIII

DAVAO LIGHT AND POWER COMPANY
INDUSTRIAL RATE STRUCTURE AND GENERATING CAPACITY

Diesel generating capacity (October 1964)	
One generator @ 300 kw	300 kw
One generator @ 1,000 kw	1,000
Two generators @ 1,400 kw	2,800
Two generators @ 3,150 kw	6,300
Total	10,400 kw
Industrial power schedule no. 6 (for connected loads from 5 to 30 kw)	
Demand charge	
Per month/kw of connected load	₱4.00
Per month/kw of connected load if used between hours of 5 p.m. and 9 p.m.	₱5.00
Energy charges	
First 250 kwh/month (per kwh)	₱0.12
Next 1,000 kwh/month (per kwh)	₱0.08
All excess kwh/month (per kwh)	₱0.06
Minimum charge	same as demand charge
Industrial power schedule no. 7 (for connected loads in excess of 30 kw)	
Demand charge	
Per month/kw of maximum demand	₱4.00
Per month/kw of maximum demand if used between hours of 5 p.m. and 9 p.m.	₱5.00
Energy charges	
First 2,000 kwh/month (per kwh)	₱0.08
Next 4,000 kwh/month (per kwh)	₱0.06
All excess kwh/month (per kwh)	₱0.04
Minimum demand charge (per month)	₱120.00
Minimum total charge (per month)	₱250.00

Source: Davao Light and Power Company.

with 350,000- and 400,000-gallon storage capacities, respectively. The former is fed by seven artesian wells having a total pumping capacity of 700 gallons per minute. The Matina Reservoir is fed by a six-inch pipe from Malagus Dam and is presently restricted from use for general purpose water supply in order to build up a reserve for fire protection.

Water is charged at the rate of ₱.20 per cubic meter for the first 500 cubic meters of volume used per month, and ₱.16 per cubic meter above 500. Only about 3,500 customers are served. The water pressure of the system is extremely low, and there is believed to be extensive seepage both into and out of the antiquated distribution pipes. Most Davao City residents and businesses collect rain water for drinking and other domestic purposes. Many homes and commercial enterprises and most sizeable industries have private wells and water treatment facilities.

Major improvements to the Davao water system have been planned and partially undertaken by NAWASA. Additional financing and further construction will be required, however, before any benefits can be received from this work. A total of ₱3.9 million has been spent to dam the Sibalen River, 36 kilometers from the Poblacion; to lay eight kilometers of 18-inch transmission pipe; and to construct a sedimentation basin. An estimated additional ₱5 million is needed, however, to complete the transmission line and to make necessary improvements and extensions to the local distribution system.

To assure an adequate and usable water supply for its tenants, it will be necessary for the industrial estate to provide its own source of water, treatment facilities, and distribution system. In the absence of any public sewerage facilities in the city or province of Davao, it may also be necessary to provide for a sewage disposal system.

Telecommunications

The Philippine Long Distance Telephone Company (PLDT) serves the Davao City area and provides connections to other cities in Mindanao and the nation, through radiotelephone. The PLDT is presently engaged in a ₱5.6 million expansion and improvement program in Davao City, including conversion to an automatic dialing system. The telephone company will provide service to the industrial estate tenant on application.

Telegraph service to Manila, other provinces, and all international centers is available in downtown Davao, at the Davao Insular Hotel, and at the airport. A private radiotelephone system also provides leased service between Davao, Manila, and other major cities.

Highways

The lack of an adequate highway system severely handicaps local and regional transportation within Davao City and throughout Mindanao. Davao City, with a total land area of 2,211 square kilometers, has at present only 120 kilometers of first class roads, of which only 20-1/4 kilometers are concrete paved, 20 kilometers are of gravel base and surface, and 13 kilometers are macadamized. The remaining roads are constructed of crushed coral and other materials. There are an additional 181 kilometers of second class roads, which are largely gravel surfaced, and 296 kilometers of third class roads, primarily of compressed or scraped earth. Large portions of the city are totally inaccessible by automobile.

The major highway serving Davao City is National Highway Route 1, which traverses both the city and the province. To the northeast the National Highway system connects Davao City with Butuan City and Surigao, to the south with Digos and Dadiangas, and to the northwest with Cotabato, Iligan, and Cagayan de Oro. The prevailing road conditions, however, often reduce average speeds to less than 30 kilometers per hour. Some major trans-island roads are almost impassable for trucks and buses.

In addition to causing inconvenience, the poor highways result in a considerable economic loss, in terms of time consumed and drastic shortening of the useful life of motor vehicles. The economy of Davao City suffers further from the inability of local industries and distributors adequately to serve what could otherwise be major regional markets.

Within Davao City the National Highway traverses the rich coastal plain and bisects the Poblacion area. Most industrial and commercial activities are concentrated along the highway, which parallels the coastline of the city at a distance of no more than two kilometers from the coast. Most of the concrete pavement within Davao City consists of portions of the National Highway situated in and around the Poblacion, in either direction. Santa Ana and Sasa ports and the airport are within the paved area and generate much of the traffic.

Air Transportation

Davao City has one of the three trunkline airports in Mindanao, as designated by the Civil Aeronautics Administration.* Davao City airport is a major termination point for Philippine Air Lines (PAL) express flights from Manila to the south, and is the hub of local flights within south-central Mindanao. Airfield facilities are generally adequate for present and projected levels of service. Davao and Manila are connected by two nonstop 2-1/2-hour PAL flights each way daily, and one flight with a stopover at the City of Cebu. Six local flights bring the daily scheduled total to twelve and provide additional service between Davao and Cagayan de Oro, Cotabato, Tacurong, General Santos, Zamboanga, and the Southern Visayas. Fast Airways also serves Davao with nonscheduled flights from Manila and Cebu.

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* The others are Zamboanga and Cagayan de Oro.

Sea Ports

Davao City is a major shipping center for both inter-island and ocean-going vessels. Davao City has two major seaports, Santa Ana and Sasa. Both provide berths and anchorages that are well protected from the open Davao Gulf by Samal Island, situated to the east and across the Pakiputan Strait.

Santa Ana Port serves primarily inter-island vessels and small craft that ply the coast of Mindanao. It is situated within the Poblacion, at the end of Magsaysay Boulevard. The major port facility is a pier 23 meters in width extending 180 meters from the shore. The pier is extremely congested by trucks and other vehicles, and the open storage of cargoes. Plans have been made for the widening and lengthening of the pier and the additional dredging that would be required, but funds are not available.

The newer Sasa Port serves primarily the larger oceangoing vessels that carry cargoes between Davao and Manila, Cebu, and foreign ports. It is situated in the Sasa district of Davao City, about eight kilometers northeast of the Poblacion. The major port facility is a 500-foot wharf extending along the coast line. A 325-foot extension is presently being constructed, and another 225-foot extension is planned. When these developments are complete, the port will be able simultaneously to accommodate two seagoing and one inter-island vessels. A further 1000-foot expansion has been recommended.

Like Santa Ana, the Sasa Port suffers from extreme congestion, damaged cargoes, pilferage, antiquated cargo handling methods, and insufficient enclosed storage space.

Major export items from ports in the Davao Customs District include logs, copra, coconut oil, hemp, ramie, and plywood and veneer. Major imports include machinery and equipment, automobile and truck parts, petroleum products, and a wide range of consumer goods.

V PROJECTION OF THE DEMAND FOR FACTORY SPACE

In projecting the future space requirements (land and factory buildings) of the industrial estate, it is assumed that the demand for space will come from the following sources:

1. Relocation of manufacturing establishments presently existing in Davao City and Davao Province
2. New establishments originating in Davao City
3. New establishments originating in Davao Province
4. Branch plants originating in Metropolitan Manila

Each of these sources of demand will be discussed in turn. Two special industrial surveys were conducted to assist in formulating reasonable judgements necessary for making the estimates. One was a survey of manufacturing industry in Davao City, and the second was a survey of the large industrial concerns having their headquarters in Metropolitan Manila.

In considering the sources of branch plant investments in Davao City, one naturally regards Metropolitan Manila as one of the most likely sources. Therefore, for the sake of simplicity, all other sources of demand are designated as originating within Davao Province. While it is recognized that firms other than those in Manila may represent potential investors, it is not likely that industrial investment in Davao City originating elsewhere in Mindanao will be meaningful enough to be considered in a separate category. In addition, this demand would be unpredictable.

An extensive statistical analysis was conducted on projecting the future growth of new industrial establishments and employment in Davao City and Province. A majority of the establishments likely to demand space on the industrial estate in the future are expected to originate in the Davao area. To make the projection, it was necessary to establish the economic framework within which the Davao economy would function in the future. As the development of an industrial estate project might be expected to cover an elapsed time of ten to fifteen years, it was decided to make the economic projections span the period 1965-80.

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The first step required a projection of the population of the Philippines, its regions, and its provinces, with special reference to the Mindanao-Sulu region. After comparing the population projection of 1960 to 1980 prepared by the United Nations in 1959,* and the recent low, medium, and high projections to 1970 prepared by the Philippine Bureau of the Census and Statistics (Table XXX, Appendix A), after checking the views of knowledgeable demographers, it was decided to employ the medium level projections of the Census as most correctly reflecting the probable course of future population growth for the period under consideration. The Census projection was carefully done, using the cohort method of analysis, and based on the assumptions of a continuation of a high fertility rate of 53.91 births per thousand; a gradually declining mortality rate with expectation of life at birth rising from 52.5 to 55.0 to 57.6 per thousand, respectively, for the three successive five-year periods to 1975; no in-migration; and a sex ratio of 105 males to 100 females (Table XXX, Appendix A). The rate of population growth of 2.9 percent compounded, which was experienced between 1948-60, is expected to be exceeded gradually by these assumptions. The Census projection had been extended to 1975 by the Population Institute of the University of the Philippines using the same assumptions.

For the purpose of the present analysis, the Census projection was extended by extrapolation to 1980 at a rate of 3.62 percent compounded annually, which produces a growth of the population from 27,088,000 in 1960 to 54,937,000 by 1980 (see Table IV). This is a rate slightly lower than the 1959 UN projection, which had resulted in an exact prediction of the Census results of 1960. Should the medium level Census projection tend to produce results with a conservative bias, this is considered preferable for the purposes of this feasibility study.

The second step in the analysis required a breakdown of the Philippine population projection on a geographic basis. The projections of the Population Institute for regions and provinces which extended the projections of the Bureau of Census from 1970 to 1975 were available for this purpose. These projections are shown in Table XXX of Appendix A. The assumption of this geographic projection is that each region and province will continue to have the same proportion of the 1960 population of the Philippines for the entire 1960-75 period.

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* The Population of Southeast Asia (Including Ceylon and China: Taiwan) 1950-1980, United Nations Organization, ST/SOA/Series A/30, New York, 1958, p. 144.

In the view of the writer this assumption has the serious defect of vastly understating the prospective growth of the Mindanao area. With few exceptions the various provinces and sub-regions of Mindanao had grown much faster than the national average in the 1903-60 period, while between 1948 and 1960 an accelerated rate of growth appears to have been registered. All evidence points to the conclusion that the growth of the Mindanao population will continue to be at a faster pace than the nation as a whole. Table IX shows past and projected population figures for Mindanao provinces.

The natural net reproduction rate is probably little different for Mindanao than it is for the nation,* but the higher level of Mindanao growth is attributable to the historical fact of a high rate of in-migration. The underdeveloped resources, the availability of homesteads, and the availability of jobs in forestry, agriculture, and mining have long attracted people to Mindanao. The population surge into the region rose sharply after World War II. There is a view that the peak in-migration occurred between 1951 and 1959, and that there may be some slackening in the future. In any case one might expect the continued migration to be sufficient to continue to push regional growth above the national level.

A study of migration statistics from the Census of 1960 by the Mindanao Development Authority shows that 30 percent of the population was born outside the province of residence, indicating the extent to which population growth is inflated by migration from other areas of the Philippines. As may be expected, most of the migration is from nearby areas. In fact, 69 percent of those born outside Mindanao come from the Visayas, which was the area that lost a high proportion of its natural population increase between 1948 and 1960 by out-migration.

In absolute terms, this census indicated that Cotabato Province had the highest proportion of in-migrants--378,160, compared to 369,876 in Davao Province. Among these most heavily populated provinces, Davao Province had the highest proportion of in-migrants--41.4 percent, compared to 36.7 percent in Cotabato; however, Zamboanga del Sur (48.5 percent), Bukidnon (44.7 percent), and Agusan (44.6 percent), had the highest proportion of population born outside the Mindanao provinces. The rest

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* See the articles by Francis C. Madigan, S.T. of the Research Institute for Mindanao Culture, Xavier University, Cagayan de Oro City. Philippine Sociological Review, Vol. 10, No. 3-4, July-Oct. 1962, pp. 171-176, and Vol. 2, No. 1-2, Jan.-Apr., pp. 101-117.

Table IX

POPULATION AND PERCENTAGE OF POPULATION OF MINDANAO REGION, BY PROVINCES 1903-1960, and Projections 1960-1980

	1903	1918	1939	1948	1960	1965	1970	1975	1980	Compounded Rate of Growth (percent) 1948-60	Compounded Rate of Growth (percent) 1960-80
Philippines (000's)	7,635	10,314	16,000	19,234	27,088	31,939	37,985	45,527	54,937		
Mindanao											
Population (000's)	670	1,106	2,245	2,944	5,384	6,547	8,359	10,700	13,735	5.2 %	4.79%
Percent of Philippines	8.78%	10.72%	14.03%	15.31%	19.88%	20.50%	22.00%	23.50%	25.00%		
Cotabato											
Population (000's)	126	172	299	440	1,020	1,300	1,800	2,450	3,274	7.30	5.69
Percent of Philippines	1.65%	1.67%	1.87%	2.29%	3.80%	4.07%	4.74%	5.38%	5.96%		
Davao											
Population (000's)	65	107	293	365	893	1,150	1,600	2,185	2,956	7.70	6.17
Percent of Philippines	0.85%	1.04%	1.83%	1.90%	3.30%	3.60%	4.21%	4.80%	5.38%		
Zamboanga del Norte											
Population (000's)	17	57	139	168	281	320	380	475	565	4.40	3.58
Percent of Philippines	0.22%	0.55%	0.87%	0.87%	1.04%	1.04%	1.04%	1.04%	1.03%		
Zamboanga del Sur											
Population (000's)	81	90	217	354	742	880	1,050	1,273	1,520	6.40	3.65
Percent of Philippines	1.06%	0.87%	1.36%	1.84%	2.74%	2.75%	2.76%	2.80%	3.08%		
Sulu											
Population (000's)	91	173	247	241	327	360	400	450	501	2.60	2.17
Percent of Philippines	1.19%	1.68%	1.54%	1.25%	1.21%	1.13%	1.05%	0.99%	0.91%		
Agusan											
Population (000's)	31	45	99	126	271	350	460	600	783	6.60	5.45
Percent of Philippines	0.41%	0.44%	0.62%	0.66%	1.00%	1.13%	1.21%	1.22%	1.42%		
Bukidnon											
Population (000's)	21	40	58	63	194	280	420	618	908	9.80	8.00
Percent of Philippines	0.28%	0.39%	0.36%	0.33%	0.72%	0.88%	1.06%	1.36%	1.65%		
Lanao del Norte											
Population (000's)	22	21	99	132	271	345	440	560	714	6.20	4.96
Percent of Philippines	0.29%	0.20%	0.62%	0.69%	1.00%	1.08%	1.16%	1.23%	1.30%		
Lanao del Sur											
Population (000's)	0.164	70	144	212	378	450	550	675	821	4.90	3.95
Percent of Philippines	0.0002%	0.68%	0.90%	1.10%	1.40%	1.41%	1.45%	1.48%	1.49%		
Misamis Occidental											
Population (000's)	45	81	210	208	248	275	300	339	375	1.50	2.10
Percent of Philippines	0.59%	0.79%	1.31%	1.08%	0.92%	0.86%	0.79%	0.74%	0.68%		
Misamis Oriental											
Population (000's)	87	127	214	370	389	455	540	650	786	0.40	3.60
Percent of Philippines	1.14%	1.23%	1.34%	1.92%	1.44%	1.43%	1.43%	1.43%	1.43%		
Surigao del Norte	84 1.10%										
Population (000's)		67	126	155	195	205	220	215	258	1.90	1.40
Percent of Philippines		0.65%	0.79%	0.81%	0.72%	0.64%	0.58%	0.47%	0.47%		
Surigao del Sur											
Population (000's)		55	100	110	165	185	210	228	274	3.40	2.57
Percent of Philippines		0.53%	0.62%	0.57%	0.61%	0.58%	0.56%	0.50%	0.50%		

Source: Projections by Stanford Research Institute.

of the provinces showed numbers of in-migrants ranging between 1.8 and 21.8 percent.

Graphic regression analysis relating national and Mindanao population growth revealed a linear semilogarithmic relationship which projected Mindanao population growth from 20 percent of the nation's population in 1960 to 25 percent in 1980. However, this rate of growth for Mindanao is below the 1948-60 experience. Considering the views of demographers that the 1948 Census may have represented an underestimation and the possibility that there may be some slowing up of growth in the future, the expansion of the Mindanao population from 20 to 25 percent over the 20-year period 1960-80 may be accepted as a reasonable projection of future population prospects in the region. Whereas the 1948-60 compounded annual growth rate of Mindanao was 5.2 percent, the analysis suggested a projection on the basis of the lower rate of 4.79 percent (see Table III).

In projecting the population of the provinces and cities of Mindanao it was decided in accordance with this analysis to dampen the 1948-60 growth rate of these political subdivisions to make the regional percent of population in 1980 conform to the above 25 percent. The resulting projections for Mindanao provinces and major cities are shown in Tables VII and IX.

Since the eventual results required a projection of the number of manufacturing establishments and employees for Davao City and Province, it was necessary to make these projections for the nation and for Mindanao to test the results for reasonableness. This required an analysis of the trends in the labor force and special attention to the behavior of certain components, including the agricultural sector, nonagricultural activity, and manufacturing.

The labor force, as related to the total population, appears to be unusually low in the Philippines as compared with other countries, and it has led students of the problem to question their accuracy. In the absence of any better data it was decided to use the available official statistics. These included data on the labor force and a breakdown by sectors for the period 1956-63 (Table X), which established the base levels for the projections, namely, 1960 and 1963. The UN labor force study of 1959 indicated a slow gradual decline of the population participation rates in the labor force, but the decline is so nominal that it was assumed the 1963 rate of 34.13 percent would continue to 1980. (Table III)

In projecting agricultural employment, the trend established in the UN study was used, tied to the 1963 base (Table IV). This shows the

Table X

LABOR FORCE, EMPLOYMENT BY SECTORS, AND UNEMPLOYED, PHILIPPINES
1956-1963
(Thousands of Workers)

	1956	1957	1958	1959	1960	1961	1962	1963
Agriculture	4,547	4,997	5,277	5,297	5,224	5,514	5,898	5,797
Manufacturing	962	1,005	927	992	1,036	1,026	1,052	1,140
Mining	31	27	21	35	29	31	39	29
Construction	198	228	161	210	231	230	236	273
Trade	803	785	743	811	753	873	911	994
Transportation (including electricity and gas)	245	238	252	271	291	297	316	340
Services (including government)	859	887	909	921	929	1,085	1,123	1,165
Other	56	31	39	38	46	38	27	26
Total employed	7,701	8,198	8,329	8,575	8,539	9,094	9,602	9,764
Unemployed	860	631	647	541	577	618	664	469
Total labor force	8,561	8,829	8,976	9,116	9,116	9,712	10,266	10,233

Source: Program Implementation Agency.

usual historical decline of employment in the agricultural sector with increasing industrialization. Consequently, the nonagricultural labor force is seen to rise from 43.4 percent in 1963 to 63.6 percent by 1980 or a cumulative growth rate of 6.0 percent annually which compares with the national population growth rate of 3.6. The projection of the nonagricultural labor force became the basis for the projection of manufacturing employment.

Analysis of the trend in manufacturing employment as a ratio of the labor force in the period 1956-63 presents difficulties because of cyclical movements. There is no clear-cut evidence that manufacturing employment has grown sufficiently to maintain a constant ratio to the labor force. In fact there is the possibility that manufacturing employment may decline somewhat proportionately. Nevertheless, the projection in Assumption I is based on maintaining manufacturing employment as a constant 11.0 percent of the labor force, which is tantamount to having the manufacturing sector expand at the population growth rate (Table X). This assumption produces the effect of having manufacturing employment decline rather sharply as a proportion of the nonagricultural labor force--from 25.7 percent in the 1963 base period to 17.3 percent in 1980. Such an effect would be contrary to the objectives of the Philippine Socio-Economic Development Program. While the development program may presently be lagging in the manufacturing sector, one may expect, when the program becomes fully geared, that manufacturing employment will rise faster than the nonagricultural labor force.

Consequently, in Assumption II, manufacturing employment is assumed to grow at the same rate as the nonagricultural labor force. In the period 1963-80 it is projected to grow at a compound rate of 5.85 percent annually, which tends to raise this sector from 11.14 to 15.89 percent of the labor force by 1980. This is still far below the target of 20.2 percent stated in the "Five-Year Integrated Socio-Economic Program for the Philippines."* In any case, an annual rate of increase of more than 5 percent in manufacturing employment is a very creditable economic performance. This method of estimation was used, therefore, in carrying out the projections for Mindanao.

The same procecure was applied in arriving at a projection of Mindanao manufacturing employment (Table III). Again, the projections were based on a constant ratio of the nonagricultural labor force. This results in the growth of manufacturing employment at the rate of 6.75 percent compounded annually between 1965-80. The low density of manufacturing employment in Mindanao is shown by the fact that in 1963 it represented only 7.21 percent of the nonagricultural labor force (Table III), compared to 25.7 percent for the nation as a whole (Table IV).

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* From the Address on the State of the Nation to the First Session of the Fifth Congress of the Republic of the Philippines, January 22, 1962.

Since there is no sector breakdown of employment available for Davao City or Province to provide information on the nonagricultural labor force, it was necessary to modify the procedure in projecting manufacturing employment for Davao City. No recent data are available for total manufacturing employment. Fortunately, unpublished data are available from a 1963 Census survey of manufacturing establishments having five or more workers. The survey showed 211 establishments in Davao City with a total of 5,261 workers.* In the absence of trend data on the growth of the nonagricultural labor force from which a trend for manufacturing employment could be derived, the approach was to assume that manufacturing would grow in Davao City in the same proportion as that of Mindanao; i.e., the growth rate of nonagricultural employment over population growth rate for Mindanao, multiplied by the population growth rate of Davao City. Thus the growth rate of 6.32 percent compounded annually was applied in projecting manufacturing employment for Davao City in all establishments having five or more workers. Employment is expected to rise in the 1963-80 period from 5,261 to 14,910, or by 283 percent.

To determine the number of establishments it was assumed that the average number of workers would increase annually at the rate of 1 percent. This results in a projection of numbers of establishments from 211 to 506 over the 1963-80 period. These manufacturing employment and establishment numbers, as projected, were the basis for the estimate of space requirements for manufacturing firms generated in Davao City (Table XI).

Similar ratios were employed in projecting employment and numbers of establishments in the area of Davao Province outside Davao City, as most of the firms generated in the province are likely to settle in an area not far from the city, probably along the National Highway.

Relocation of Existing Establishments

An important element in projecting the demand for industrial land and factory space on an estate is the extent to which existing firms

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* This assumes the average at the midpoint of each size group.

Table XI

PROJECTION OF DAVAO CITY MANUFACTURING EMPLOYMENT AND NUMBER OF ESTABLISHMENTS BASED ON TWO ASSUMPTIONS:
I. CONSTANT PROPORTION OF LABOR FORCE, AND
II. CONSTANT PROPORTION OF NONAGRICULTURAL LABOR FORCE, 1963-1980

							Growth Rate (Percent)	
	1960	1963	1965	1970	1975	1980	1960-80	1963-80
Population	225,712	259,200	284,260	357,500	449,930	567,750	4.72%	
Percent in labor force	33.65%	34.13%	34.13%	34.13%	34.13%	34.13%		
Labor force	75,950	88,470	97,020	122,010	153,560	193,770		
Assumption I: Constant proportion of labor force, establishments 5 or more								
Employment		5,264	5,770	7,260	9,140	11,530	4.00	4.73%
Percent of labor force		5.95%	5.95%	5.95%	5.95%	5.95%		
Assumption II: Constant proportion of nonagricultural labor force, establishments 5 or more								
Employment		5,261	5,955	8,080	11,080	14,910		6.32[a]
Number of establishments		211	234	303	390	506		5.293
Average per establishment		24.94	25.4	26.7	28.1	29.5		1.00

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a. $472 \times \frac{6.42}{4.79} = \left(4.72 \times 1.34\right) = 6.32$.

Source: Stanford Research Institute.

might wish to relocate their production facilities. A relocation decision usually arises from dissatisfaction with the existing location because of insufficient space, substandard building, high fire risk, and slum or other disadvantageous surroundings. Firms in such locations benefit a great deal from shifting to new and modern facilities where there is adequate space for each worker, good sanitation, and good lighting--conditions which tend to provide a real opportunity for improvement in manufacturing productivity.

A survey of manufacturing industry was conducted in Davao City to determine the interest in relocation on the part of existing firms.

Most of the plants visited are located within the Poblacion area. The survey was conducted in October 1964 and resulted in usable interviews with 43 manufacturing firms having ten or more workers. (The questionnaire used in the survey is reproduced in Appendix C.) Since the 1963 Census of Manufactures revealed that there were only 53 establishments in Davao City with 10 or more workers, about 80 percent of all manufacturing establishments were visited. A number of the firms not included in the survey were engaged in types of industries not considered suitable for an industrial estate. Therefore, the proportion of eligible firms surveyed as related to their interest in relocation is even higher. A number of small manufacturing enterprises in the five- to nine-employee category were visited to check on their location, factory operating conditions, and suitability for an industrial estate. In addition to meetings with business associations and business leaders, there was a general assessment of the level of development in retailing, wholesaling, and other services upon which industrialists are dependent. Much useful information was gained about the nature of the industrial structure and the types of enterprises which could arise from the local industrial base, or which could be integrated with it.

With respect to projection of the demand for space on an industrial estate, the responses of industrialists to the question concerning interest in locating on an industrial estate are summarized in Table XII by size of establishment.

Of the 43 firms contacted, 22 firms, or about one-half expressed interest in establishing a facility on an industrial estate if it were to be located in Davao City. Eighteen of these expressed an interest in relocating from their existing facilities in the Poblacion area. Four additional firms that had been established in new facilities in recent years expressed interest in locating subsidiary manufacturing units on the estate to produce different products. It may be pointed out that nearly all those interested in relocating their plant on an industrial

Table XII

INTERESTED EXPRESSED BY FIRMS IN ESTABLISHING ON AN INDUSTRIAL ESTATE, DAVAO CITY, INDUSTRIAL SURVEY

October 1964

	Number of Firms Contacted	Number of Employees				
		10-19	20-49	50-99	100-199	200 and Over
Interested in industrial estate						
Established in new facilities, interested in diversification	4	3	0	0	1	0
Established in old facilities, interested in relocation	18	7	11	0	0	0
Total interested	22	10	11	0	1	0
Not interested in industrial estate						
No plans to reestablish	21	5	6	4	5	1
Total	43	15	17	4	6	1

Sources: Mindanao Development Authority and Stanford Research Institute.

estate were renting their buildings on 10-year renewable leases and were housed generally in old, cramped, and inadequate quarters. Also of significance is the fact that all of the firms expressing a desire to relocate had less than fifty employees, indicating that they were all in the smaller size categories. Were these firms short of capital (and many stated that they were), they would have much to gain by moving to an estate where they would be able to rent land and factory space or buy on low down-payment terms so that they could conserve their limited financial resources for investment in machinery and for working capital.

Industrial Survey of Metropolitan Manila

The survey of large industrial firms headquartered in Metropolitan Manila explored the intentions and attitudes of these companies toward establishing branch plants in Mindanao; locating on an industrial estate; and, if their interest were favorable, determining what city in Mindanao would be a preferred location. The top executives of fifty-two companies were interviewed (the questionnaire used in the survey is reproduced in Appendix D) representing a broad diversified cross section of Philippine industry, including a considerable proportion of firms having an investment of foreign capital.

Interest in an industrial estate in Mindanao was expressed according to the following distribution:

Number of Employees Per Firm	Interested	Not Interested	Total
20-49	4	3	7
50-99	1	5	6
100-199	3	11	14
200 and Over	7	18	25
Total	15	37	52

Thus, one-third of the firms expressed interest in establishing a branch plant. "Interest" was interpreted to mean a definite intention to invest, and the placing of the plant on an industrial estate were it to be established in the community preferred; and a conditional expression of interest to establish a plant dependent on various specified factors being met.

The survey indicated rather well-defined locational preferences on the part of concerns planning future investments in Mindanao. Of the 52 firms contacted, 32 (62 percent) had various expansion plans which involved a total of 35 investments, as some firms were considering more than one investment. Of the 35 investments (Table XIII), 31 were planned for Mindanao, while one firm was undecided between Cebu or one of two Mindanao cities--Davao or Cotabato. As its preference at the time of the interview was Cebu, it is listed on Table XIII for Cebu.

Davao City was preferred over the other Mindanao cities by 17 companies, 13 of which indicated an interest in locating on the proposed industrial estate, while 4 were interested in a new location in Davao City, and had made their selection without considering an industrial estate as the preferred site.

Two of the companies expressing an interest in locating on an industrial estate in Mindanao were undecided, one between Davao or Iligan, and one between Cotabato or Cebu. At the time of interview, their preferences were for Iligan and Cotabato respectively, were industrial estates to be located there. These preferences are indicated in Table XIII.

Conceivably, the location of an industrial estate in Davao City could change the preference of those companies that are undecided as to the city in which they would prefer to locate a branch plant in Mindanao. Thus it is conceivable that 14 out of 15 investments related to a preference for an industrial estate might be expected to be made in Davao City.

Of the 20 other branch plant investments that might be established independently of an industrial estate, Iligan would have a competitive advantage associated with the availability of a plentiful supply of electric power from the Maria Cristina Falls. Iligan is given a preference in six instances compared to four for Davao. Two of the companies seeking a new location preferred Cotabato, but were considering Cebu as a possible second choice. Because of their preference, they are listed on Table XIII for Cotabato. Of the four companies contacted that were interested in a new location for expansion in Davao City, other than on an industrial estate, three already have established business associations, two of which have existing plants, while a third is about to build a plant. The fourth company is still developing expansion plans.

Of the 13 plants interested in locating on an industrial estate in Davao City, one company has already developed a plan to move to Davao City, and would prefer to locate on the estate. The remaining twelve firms interested in establishing plants on an estate in Davao City listed

Table XIII

PLANT INVESTMENTS PROJECTED BY MANUFACTURING COMPANIES IN METROPOLITAN MANILA

October 1964

	Interested In Locating On An Industrial Estate	Interested In New Location for Expansion
Davao City	13[a]	4
Iligan City	1[b]	6
Cotabato City	1[c]	2[d]
Zamboanga City		1
Cagayan de Oro City		1
Bislig City		1
Cebu City		2[e]
Bicol City		2
Bacolod City		1
Total	15	20

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a. Thirteen definitely interested.
b. One expressed a choice between Iligan and Davao.
c. One expressed a choice between Cotabato and Cebu.
d. Two expressed a choice between Cotabato and Cebu.
e. One expressed a choice between Cebu and Cotabato or Davao.

Source: Stanford Research Institute Industrial Survey (Appendix D).

various conditions, most of which appeared to be attainable over the next two to four years.

It should be noted that a considerable proportion of the companies included in the survey already have branch warehousing and/or distribution facilities in Davao City. These investments and business relationships are normally a first step before the establishment of a factory to serve a regional market once a sufficient volume is attained. The prospects for future investment in Davao City by such companies would therefore be excellent.

Projection of Establishments by Size of Employment

To make final estimates of factory space requirements, 1963 frequency distributions of establishments by size of employment were used for Davao City and Province for the firms expected to relocate and the new firms expected to be generated in the 1965-80 period. These results are shown in Tables XIV and XV. A complete summary is given in Table XVI of the number of establishments expected to locate on the industrial estate by size of employment; the factory area to be occupied by each; the source of investment; and whether they are local relocations, local new firms, new firms originating in the province, or new firms from Manila.

According to this analysis, a total of 145 establishments might be accommodated over the 1965-80 period. Thirty-six of these would relocate manufacturing to the industrial estate within the first five-year period, 1965-70, and 26 would establish new manufacturing facilities.

Significant also is the projection of investment in all establishments by industrial concerns of Metropolitan Manila. These are expected to be large establishments with 50 or more workers. The assumption is that six plants of the two largest sizes would be brought in during the first five-year period, eight during the second five-year period, and eleven during the last five-year period. It is believed that investments at this level might quite reasonably be expected from the many large manufacturing enterprises based in Metropolitan Manila. It should be possible to achieve such a level of investments with a vigorous promotional campaign in the Manila area.

Factory space requirements by size category are estimated by source of investment in Table XVII. It shows that a total factory space of 161,000 square meters is required on the estate. Due to the projected relocation of existing firms early in the development of the estate, a large initial increment of 52,800 square meters of factory space will be

Table XIV

SIZE DISTRIBUTION OF DAVAO CITY MANUFACTURING ESTABLISHMENTS, BY NUMBER OF EMPLOYEES, PROJECTED TO 1980 AT FIVE-YEAR INTERVALS

(Growth Rate Projected at 5.3 Percent Compounded Annually)

	Percent	Workers per Establishment								
	of 1963	5-9	10-19	20-49	50-99	100-199	200-299	300-499	500-999	Total
1963 base		158	16	24	4	3	2	3	1	211
1965	110.88%	175	18	27	5	3	2	3	1	234
1970	143.55	227	23	34	6	4	3	4	1	302
1975	185.84	294	30	45	7	6	4	6	2	394
1980	240.59	380	38	57	10	7	5	7	2	506

Source: Stanford Research Institute.

Table XV

PROJECTION OF NEW MANUFACTURING ESTABLISHMENTS ORIGINATING IN DAVAO CITY AND IN DAVAO PROVINCE OUTSIDE THE CITY, BY NUMBER OF WORKERS PER ESTABLISHMENT 1965-1980

	Workers per Establishment In Davao City					Workers per Establishment In Davao Province Outside City				
	5-9	10-19	20-49	50-99	100-499	5-9	10-19	20-49	50-99	100-499
1963 base	158	16	24	4	8	62	8	1	3	2
1965-70	52	5	8	1	3	25	3	1	1	1
1970-75	66	7	10	2	5	25	3	1	1	1
1975-80	87	8	13	2	3	30	4	1	2	1

Sources: Mindanao Development Authority and Stanford Research Institute.

Table XVI

PROJECTION OF NUMBER OF ESTABLISHMENTS ON THE DAVAO CITY INDUSTRIAL ESTATE BY ORIGIN OF INVESTMENT, SIZE OF UNIT, AND INVESTMENT PERIOD

1965-1980

Workers per plant	5-19			20-49				50-100			Over 100		
Factory area (square meters)	200-400			500-1,000				1,000-2,000			1,500-3,000		
	Local Relocation	Local New	Province New	Local Relocation	Local New	Province New	Metropolitan Manila	Local New	Province New	Metropolitan Manila New	Local New	Metropolitan Manila New	Total Estimated Establishments
1965-70	28	8	1	8	6	--	2	1	--	4	2	2	62
1970-75	--	11	1	--	8	--	3	2	1	5	2	3	36
1975-80	--	14	1	--	10	1	4	2	1	7	3	4	47
Subtotal	28	33	3	8	24	1	9	5	2	16	7	9	145
Total plants	64			42				23			16		

Source: Stanford Research Institute.

Table XVII

SUMMARY OF NUMBER OF ESTABLISHMENTS AND FACTORY SPACE REQUIRED BY SIZE OF UNIT AND INVESTMENT PERIODS, DAVAO CITY, 1965-1980

	200-400		500-1,000		1,000-2,000		1,500-3,000		Total	
	Establishments	Square Meters	Establishments	Square Meters	Establishments	Square Meters	Establishments	Square Meters	Establishments	Square Meters
1965-70	37	14,800	16	16,000	5	10,000	4	12,000	62	52,800
1970-75	12	4,800	11	11,000	8	16,000	5	15,000	36	46,800
1975-80	15	6,000	15	15,000	10	20,000	7	21,000	47	62,000
Total	64	25,600	42	42,000	23	46,000	16	48,000	145	161,600

Source: Stanford Research Institute.

required in the first five-year period. This will be followed by a requirement of 46,800 square meters in the second period and 62,000 square meters in the final stage of development of the project. A final summation of the projections shows the number of firms in each size category and their space requirements. Thus, 64 establishments would be ultimately located in workshops of 200-400 square meters in the multiple-unit buildings. Another 42 establishments would be located on lots permitting factories with a floor space of 500 to 1000 square meters, and 23 plants would be established in units of 1000-2000 square meters. Finally, 16 plants would range in size from 1500 to 3000 square meters.

VI LOCATIONS SUITABLE FOR THE INDUSTRIAL ESTATE

Following the selection of Davao City as the best area in Mindanao in which to develop a pilot industrial estate, consideration was given to various locations within Davao City where the project might best be situated. This section identifies, describes, and evaluates the several preferred locations within which a suitable site might be selected.

Criteria for Selection

The following criteria have been used in evaluating potential locations for an industrial estate within Davao City:

1. Availability of land area of sufficient size
2. Estimated cost of land
3. Terrain and land conditions
4. Availability of utilities
5. Transportation facilities
6. Distance from the Poblacion
7. Recent locational trends
8. Location preferences stated by local firms

Minimum Area of Land Available

Primary consideration was given to the availability of vacant and developable land areas of sufficient size to achieve the desired economies of scale. In order to assure that sufficient land area would be available for the industrial estate, to avoid speculation as to its exact location, and to create the opportunity for a new and pleasing ennvironment, a minimum requirement of 200 hectares was used in the preliminary evaluation of locations. Eight areas of sufficient size and reasonable promise were identified, all situated within Davao City. These areas, listed below, are indicated by general location on the map of Davao City:

1. New Daliao
2. Dumuy
3. Talomo
4. Matina
5. North Bajada
6. South Bajada
7. Airport/Sasa
8. Panakan

No vacant land of sufficient size is available within the Poblacion area. All of the identified locations are situated within a distance of 14 kilometers from the center of the Poblacion.

Estimated Cost of Land

The tract at New Daliao is owned by the Alien Property Custodian and has an undetermined price. Estimated land costs vary widely between the seven other locations from Dumuy to Panakan, and even within individual areas when highway frontage is involved. The minimum cost or value for suitable industrial property is about two pesos per square meter for interior parcels at the distant points in New Daliao and Panakan; the maximum is about eight to ten pesos per square meter for interior sites at Bajada. Nearby frontage along the National Highway costs about four times as much in each case. Parcels of adequate size for the industrial estate should be available in all eight of the areas at a cost within the two- to ten-peso per square meter range, or perhaps less in the case of New Daliao.

The value of land generally declines with the distance away from the Poblacion, and back from the National Highway. Representative land values for various locations, as established in the survey, are shown in Section VIII.

Terrain and Land Conditions

Terrain and other land conditions are quite similar in all of the eight locations. All are situated in generally flat land ranging in elevation from about 5 to 30 meters above sea level, with a gradual seaward slope of about one foot per hundred feet. All are covered with productive crops, in most cases coconut trees. The subsoil conditions at all the locations are believed to be excellent; a coral and sand base prevails throughout the Davao City coastal plain.

The Matina and South Bajada locations provide a potential for the extension of the industrial estate to the sea, thus permitting the accommodation of larger enterprises requiring water frontage such as plywood mills and chipboard plants.

Availability of Utilities

The fact that public utility services are limited in Davao City, as described in Section IV, means that special consideration must be given to their availability at the various locations considered. With the exception of electric power and telecommunications, most utility services, including water and waste disposal, would have to be provided by the developer at each location. Water is the major limiting factor, but it is available in varying supply and quality at all of the locations under consideration. In the New Daliao and Dumuy locations, for instance, large volumes of very good water are available from free-flowing wells; most other locations will require deep wells with pumps and treatment facilities.

Transportation Facilities

The major existing transportation facilities affecting the relative desirability of sites for the industrial estate are the National Highway, the ports at Sasa and Santa Ana, and the airport. All of the locations except Panakan are situated along the concrete-paved National Highway. Panakan is adjacent to a segment of National Highway programmed for early pavement. A major, but presumably temporary, deterrent to the utilization of much of the National Highway in the Davao City area is the one-way traffic on the flood-damaged bridge across the Davao River southwest of the Poblacion. Reconstruction of this bridge will require an estimated ₱500,000 and a reported six months time after funding. If the bridge is reconstructed before the industrial estate is ready for marketing, there will be little advantage between locations as regards use of the National Highway; otherwise, development of all sites south of the Davao River will be greatly hindered. The airport and the expanding Sasa seaport provide a transportation nucleus of considerable importance, and are an advantage to all locations on the north side of the river.

Distance from the Poblacion

A major factor affecting suitability of the various locations for an industrial estate in Davao City is their relative distance from the Poblacion, or city proper. This "downtown" area has a high population density; a concentration of markets, suppliers, and services; and financial, business, educational, cultural, and recreational facilities. This is the heart of the city where many of the people live, a majority of the important meetings are held, and business is transacted.

Even with the most favorable transportation facilities, the downtown area is a magnet for new business location and expansion. Due to the limitations of Davao City's transportation facilities, proximity to the population and business center will be particularly important. This is especially true for small- and medium-scale industries which are highly dependent on local industrial services, suppliers, and markets.

The approximate distances from the center of the Poblacion to each of the eight locations under consideration are as follows:

Location	Distance (Kilometers)
1. New Daliao	14
2. Dumuy	12
3. Talomo	10
4. Matina	5
5. North Bajada	5
6. South Bajada	5½
7. Airport/Sasa	7
8. Panakan	13

Four of the locations, numbers 4 through 7, are situated in relatively close proximity to the Poblacion, while the remaining four are at significantly greater distances.

Recent Locational Trends

Some significant patterns of locational preference have been established by the recent decisions regarding a number of industries in Davao City. The Dumuy area, for instance, has been selected for two new manufacturing plants with large water requirements--Pepsi Cola and the Borden Chemical Company. Several new saw mills and a box manufacturer have recently located in the Matina area. At least seven manufacturing or distribution firms have recently located on or purchased sites in the Bajada area; these are U.S. Industries, Philippine Blooming Mills, Radiowealth, Honolulu Iron Works, Davao Motor Sales, a machine shop, and a small furniture plant. The waterfront area between Sasa and Panakan has seen the location of a major bonded warehouse, the Sarmiento plywood mill, and a new saw mill. The major trend illustrated by these decisions is a general movement of industry to the north of the Poblacion.

Location Preferences

The northward trend was further substantiated by the SRI-MDA survey of existing manufacturers in the Davao area. Of 27 firms indicating an intention or interest in relocating, the majority preferred sites north of the Poblacion. The frequencies with which the major districts were specifically mentioned are shown below. Some firms mentioned more than one preferred location, and others had no preference.

North of the Poblacion		South of the Poblacion	
Bajada	13	Matina	3
Sasa	9	Talomo	2
Total	22	Dumuy	2
		New Daliao	1
		Total	8

Evaluation and Recommendations

A majority of the factors considered as criteria for the selection of a suitable site for the industrial estate show only relatively minor advantages for any one or more of the eight suggested locations. The two most important criteria, however, would appear to be distance from the Poblacion, and the stated site location preferences of firms now operating in Davao City. These two factors alone will have by far the greatest impact on the attraction of occupants to the industrial estate, and thus on its overall success.

In order to provide maximum opportunity for successful development, it is strongly recommended that the industrial estate be located within a distance of eight kilometers from the center of the Poblacion, and at a distance of no more than 300 meters from the National Highway. The first restriction removes from active consideration the four more distant locations--New Daliao, Dumuy, Talomo and Panakan. Since few existing firms stated a preference for these locations, it is further evidence of their limited desirability as sites for the industrial estate project.

Any of the four remaining locations--Matina, South Bajada, North Bajada, and Airport/Sasa--would appear to be suitable. The specific areas within which the estate project might best be located are shown in Fig. 1, the map of Davao City. Among the four locations, however, the greater industrial development activity presently occurring in the Bajada area, and its indicated survey preference, suggests that the area might bear special investigation. In view of the added potential for establishing water frontage sites at the Bajada location on the south side of the National Highway, it is recommended that area number 6 (termed South Bajada in this report) be given special consideration. This South Bajada location is also used in the several planning and feasibility discussions that follow in Sections VII and VIII.

While other land might be acquired at a lower cost, the overall desirability of the South Bajada site suggests that the proposed estate will have its best opportunity for financial success at that location. At most the land price will represent about 10 percent of the total development cost, including buildings. It cannot be overemphasized that the selection of the right land will have a much greater impact on the attraction of industries to the estate than would the selection of a less desirable location because of lower land cost.

A poorly located industrial estate would fail to achieve the projected demand and occupancy rates as set forth in Section V. It would be unwise to invest in buildings and other improvements on cheap or free land, only to find that industrial enterprises will not move into the facilities because they were poorly located. Indeed, locating the estate at a distance of more than eight kilometers from the Davao City Poblacion might make the project infeasible, even if the land were acquired at a very low cost.

VII AN INDUSTRIAL ESTATE PLAN FOR DAVAO CITY

The planning considerations set forth here are intended as a guide to the development of an industrial estate at any one of the four suitable locations described in Section VI. The four areas recommended for location are quite similar in their major site characteristics--proximity to the Poblacion, terrain, subsoil conditions, slope, and land cover. It should be possible to locate a specific site within each recommended area on which the general development plan, with some modification, can be utilized. However, because of the special attractions found in the South Bajada location, the portion of the Bajada area situated on the south side of the National Highway between kilometer markers 370 and 371, the plan has been adapted in some respects to that location.

Phasing of Development

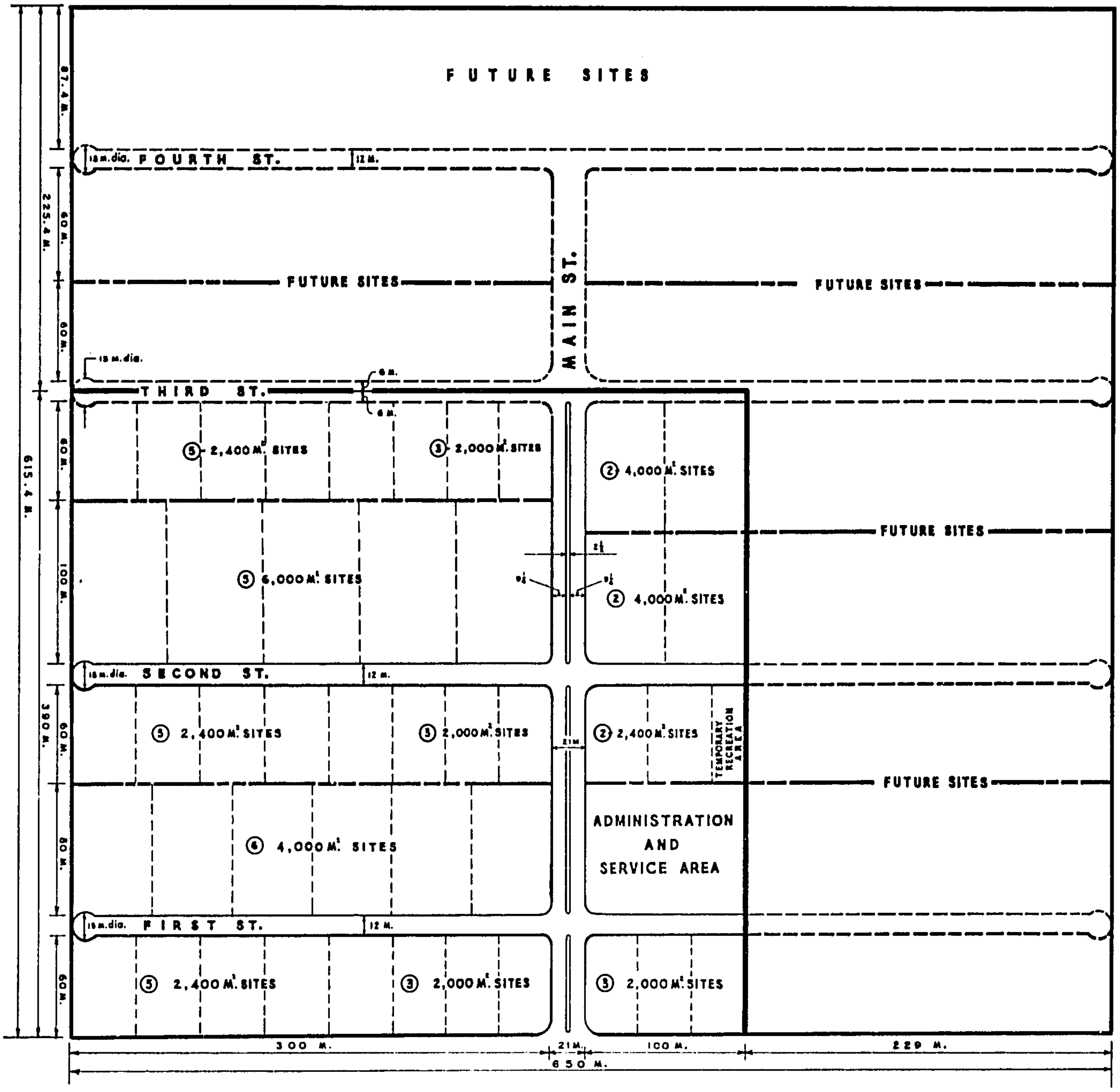
In view of the projections of demand for industrial building space as presented in Section V, it would appear that a total land area of approximately 40 hectares would be sufficient and appropriate for the industrial estate project at Davao City. It is recommended, therefore, that an area of at least 40 hectares be designated and acquired for the industrial estate. The planning factors set forth in this section and the financial feasibility analysis in Section VIII are based on this figure. A suggested layout and site plan is shown in Figure 2.

The acquisition of an additional land area of 60 hectares or more, adjacent to the 40 hectares, would be desirable. This would provide space for the accommodation of larger enterprises, and at the South Bajada site could include those requiring water frontage. Additional land would be available for future expansion, and the developer would benefit from an increase in property values produced by the development of the estate. The larger area would also permit increased environmental protection by controlling the quality of surrounding developments.

However, any income or expense expected to accrue from the acquisition of additional property should be treated separately from the feasibility of the 40-hectare industrial estate, and the infrastructure for the estate should not necessarily be planned to serve the larger area.

FIGURE 2

SUGGESTED LAYOUT AND SITE PLAN
Davao City Industrial Estate



SCALE 1:20

UNIT I - 16.4 HECTARES
UNIT II - 23.6 HECTARES
TOTAL 40 HECTARES

SOURCE: Stanford Research Institute.

In order to relate the development of estate facilities to the expected timing of factory space needs indicated by the demand projections, it is recommended that the industrial estate be constructed in at least two stages. An appropriate size for the initial undertaking, to assure adequate space and achieve desired economies, would be an area of approximately 16 hectares (40 acres). This has proven to be a desirable size from the viewpoint of achieving economies of scale for projects that have been developed elsewhere and seems appropriate in view of local conditions in Davao City.

The planning and feasibility discussions that follow will consider and analyze in turn (1) a 16.4-hectare Unit I development, (2) a 23.6-hectare Unit II undertaking, and (3) the total 40-hectare project. It is expected that Unit I will be constructed and substantially occupied during the first five years after the acquisition of land, and that Unit II will be constructed and occupied during the ensuing ten-year period.

Lot Size Requirements

The factory space demand projections set forth in Table XVII provide data on the number and size of establishments expected to locate on the industrial estate during each five-year period from 1965 to 1980. These projections are based on establishments which fall in four classifications of plant size:

1. 200 to 400 square meters
2. 500 to 1,000 square meters
3. 1,000 to 2,000 square meters
4. 1,500 to 3,000 square meters

A selection of building lot sizes must be provided within the estate to accommodate establishments with a wide range in space requirements. For purposes of projecting actual building lot requirements, it has been assumed that each enterprise has the potential to expand to the maximum size of its classification, and that a 50 percent maximum utilization of total land area for building purposes is desirable and will be enforced.

It is expected that all enterprises requiring up to 400 square meters of factory space will be accommodated in multi-unit buildings with room for as many as six establishments. An estimated 30 percent of the enterprises which require 500 to 1,000 square meters would be expected to locate in multi-unit building quarters. Multi-unit buildings with an overall area of 1,200 square meters are recommended; each would require a lot size of 2,400 square meters.

The remaining 70 percent of enterprises which require 500 to 1,000 square meters, and those of larger size, would be expected to occupy individual buildings with the following average lot size requirements:

Size of Factory (square meters)	Average Lot Size Requirement (square meters)
500 - 1,000	2,000
1,000 - 2,000	4,000
1,500 - 3,000	6,000

A detailed breakdown of factory space and average lot size requirements, by number and size of projected establishments, is shown in Table XVIII.

Average lot sizes will be appropriate for some, but not all establishments that actually locate on the industrial estate. Considerable flexibility must be maintained in site planning and layout to accommodate the many larger- or smaller-than-average occupants that may be expected.

The major fixed determinant of lot size is the depth. When streets have been constructed, site depths become fixed. The optimum depth for an industrial estate site, considering both function and economy, is usually from 60 to 80 percent greater than the width. While site depths are difficult to change, individual lot widths can easily be adjusted to produce larger or smaller than standard site sizes. Lot widths can seldom be adjusted to less than 50 percent or more than 100 percent of the site depth, without a serious loss of function or economy. A range of available lot sizes can thus be provided by the widening or narrowing of lot widths in relation to a constant site depth.

A suggested set of lot sizes to meet the projected average building site requirements of the industrial estate is shown in Table XVIII. Site depths of 60, 80, and 100 meters are used in this example, with 60-meter depths providing for both the 2,000-square meter average site required by single small enterprises, and the 2,400-square meter site needed for multi-unit buildings. Lots with 80-meter depths provide for medium-sized enterprises with an average site requirement of 4,000 square meters. Lots with 100-meter depths are used for larger enterprises with an average site of 6,000 square meters. Lot widths in each case can be adjusted to provide for substantially larger or smaller than average building site requirements.

Table XVIII

NUMBER OF BUILDINGS REQUIRED, BY CONSTRUCTION UNITS AND SIZE OF ESTABLISHMENTS
DAVAO CITY INDUSTRIAL ESTATE
1965-1980

Size of Establishment			Unit I		Unit II		Total		Site Sizes			
									Unit I		Unit II	
By Number of Employees	By Floor Space Requirement (square meters)	Description of Buildings	Number of Establishments	Number of Buildings Required	Number of Establishments	Number of Buildings Required	Number of Establishments	Number of Buildings Required	Number of Sites	Site Sizes (meters)	Number of Sites	Site Sizes (meters)
10-19	200-400	Multi-unit factory buildings (1,200 square meters of floor space occupied by 3-6 firms)	37	12	27	9	64	21	12	40 x 60	9	40 x 60
20-49	500-1,000 30%	Multi-unit factory buildings (1,200 square meters of floor space occupied by 1-2 firms)	5	4	8	3	13	7	4	40 x 60	3	40 x 60
	70%	Individual factory buildings (500-1,000 square meters of floor space)	11	11	18	18	29	29	11	33.3 x 60	18	33.3 x 60
50-99	1,000-2,000	Individual factory buildings (1,000-2,000 square meters of floor space)	5	5	18	18	23	23	5	50 x 80	18	50 x 80
100-199	1,500-3,000	Individual factory buildings (1,500-3,000 square meters of floor space)	4	4	12	12	16	16	4	60 x 100	12	68.7 x 87.4
Total establishments			62		83		145					
Total buildings				36		60		96	36		60	

Source: Stanford Research Institute.

Layout and Site Plan

A tract approximately square in shape is usually the most economical to serve with streets and utilities and provides maximum flexibility for project staging and site planning. The proposed industrial estate layout and site plan shown in Fig. 2 is nearly square, measuring 615.4 meters by 650 meters, and totals almost exactly 40 hectares. The first unit of development, as shown, measures 390 meters by 421 meters, and totals almost exactly 16.4 hectares.

Unit I layout shown in Fig. 2 provides for a single front tier of sites with a 60-meter lot depth, plus two interior blocks with 140- and 160-meter depths. Each of the latter can be divided from their two street frontages into lots with varying depths on either side, provided the combination of lot depths is equal to total block depth (i.e., 80 + 60 = 140). The site plan shown illustrates one example of the results that can be achieved with this flexible layout design. The result of the site plan, in terms of the total number and sizes of sites achieved, is shown in Table XIX. It corresponds closely to the building site demand projections for the first five years.

A major alternative to the layout and site plan shown can be achieved by utilizing the rear block of Unit I for sites having a depth of 166 meters, should such large land areas be needed by enterprises requiring 1-1/2 hectares or more. Because of this possibility, as well as for reasons of economy, Third Street should be the last element of Unit I to be constructed; if it is built at all, the construction should correspond in timing to the first phase of the development of Unit II. Nevertheless, the six meters of required right-of-way and the pro rata cost of constructing one-half of this portion of Third Street have been charged to Unit I for the determination of feasibility.

The layout and site plan shown in Fig. 2 also provide for a convenient and central parcel to be reserved for use by estate administration, service facilities, maintenance, water system pumps and tank, a future power substation, and public parking for buses and visitors. The designated 80- by 100-meter parcel should be sufficient for all such purposes required in Unit I. A similar but smaller area will be required in Unit II.

Street rights-of-way in Unit I, including sidewalks and culs-de-sac, will require an additional 20,600 square meters of land area. The total nondevelopable land taken up by administration and service facilities and streets is thus an estimated 28,600 square meters, or 2.86 hectares.

Table XIX

PROPOSED DAVAO CITY INDUSTRIAL ESTATE PLAN, SITE SIZES AND DISTRIBUTION BY CONSTRUCTION UNITS

1965-1980

Description of Buildings	Land Area Required (square meters)	Typical Dimensions (meters)	Unit I		Unit II		Total	
			Number Required[a]	Number Provided[b]	Number Required[a]	Number Provided[b]	Number Required[a]	Number Provided[b]
Multi-unit factory buildings (1,200 square meters of floor space occupied by 1-6 firms)	2,400	40 x 60	16	17	12	25	28	42
Individual factory buildings (500-1,000 square meters of floor space)	2,000	33.3 x 60	11	12	18	34	29	46
Individual factory buildings (1,000-2,000 square meters of floor space)	4,000	50 x 80	5	9	18	12	23	21
Individual factory buildings (2,000-3,000 square meters of floor space)	6,000	60 x 100 68.7 x 87.4	4	5	12	9	16	14
Total sites			36	43	60	80	96	123

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a. See demand projections shown in Table XVIII.

b. See layout and site plan, Figure 2.

Source: Stanford Research Institute.

This is approximately 17-1/2 percent of the total land area of Unit I, leaving 13.54 hectares, or about 82-1/2 percent, as developable land. An additional estimated 20,400 square meters of land area will be required for street rights-of-way in Unit II. A second administration and service facility is likely to require another 7,000 square meters. The total nondevelopable area within the 23.6 hectares of Unit II is thus estimated at 2.74 hectares, or 11.6 percent.

The construction of all street and utility and service facilities is expected to consume a total of 5.6 hectares, or 14 percent of the total industrial estate land area. The remaining 34.4 hectares, or 86 percent, will be available for industrial use. A résumé of developable and nondevelopable land uses is shown in Table XX.

Employment Density

With a net building coverage restriction of 50 percent of total site area, the maximum building space in Unit I for industrial and related uses will be one-half of the 13.54 hectares of developable area, or 67,700 square meters of factory space. At the projected average of one worker per 20 square meters of building space for the estate as a whole, a maximum employment of 3,385 persons could be expected in Unit I at the point of maximum allowable land utilization.* As many as 80 additional persons might be employed in administration and service facilities, bringing the maximum total estimated employment in Unit I to 3,465.

After development of Unit II, the estate as a whole will have a potential maximum industrial building space of 172,000 square meters. At an average of one worker per 20 square meters of building space, a maximum employment of 8,600 could be achieved. As many as 150 additional persons might be employed in all administration and service activities, bringing the maximum total employment on the industrial estate to 8,750.

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* The use of an average of 20 square meters of factory space per worker compares with the median of 22 and a mean of 24.5 square meters adjusted for extreme observation. The survey results tend to be inflated by an unusually high proportion of storage space. A figure of 20 square meters per worker is comparable to the dimensions used in Puerto Rico for planning purposes.

Table XX

DAVAO CITY INDUSTRIAL ESTATE SITE LAND USE
BY CONSTRUCTION UNITS
1965-1980

Land Use	Unit I (16.4 hectares)			Unit II (23.6 hectares)			Total (40 hectares)		
	Square Meters	Hectares	Percent of Unit Area	Square Meters	Hectares	Percent of Unit Area	Square Meters	Hectares	Percent of Total Area
Administration, maintenance, and service	8,000	0.80	4.88%	7,000	0.70	2.97%	15,000	1.5	3.75%
Street and utility rights-of-way	20,600	2.06	12.56	20,400	2.04	8.64	41,000	4.1	10.25
Factories and other industrial buildings (gross)	135,400	13.54	82.56	208,600	20.86	88.39	344,000	34.4	86.0
Total	164,000	16.40	100.00%	236,000	23.60	100.00%	400,000	40.0	100.00%

Source: Stanford Research Institute.

Street System

The street system for Unit I of the industrial estate, as shown in Fig. 2, is designed for adequately serving the projected peak employment density and the traffic movement generated at the maximum level of development. With the street extensions shown, the system will also provide for the maximum employment and traffic densities that would be reached by the full development of Unit II as well. It is a simple "trunk and stem" system, with dead ends rather than grids, in order to discourage the circulation of traffic within, but to encourage traffic flow into and out of the estate.

The central street, Main Street as shown in Fig. 2, has a 21-meter right-of-way 380 meters in length. This width provides for two 6.8-meter pavement strips, separated by a 3.1-meter median strip, curbs and gutters, and a one-meter grass strip and one-meter sidewalk on each side. The pavement is to be of a soil-cement stabilized base with asphalt surfacing, with a total thickness of 25.7 centimeters. Culs-de-sac with a turning diameter of 15 meters, adequate for trucks and buses, are provided at the outer end of each 300-meter radial street section, as shown on the layout and site plan.

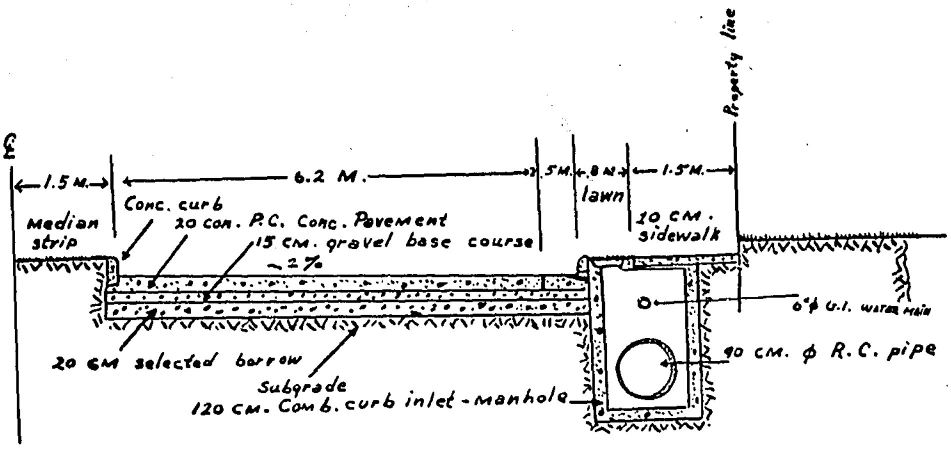
All streets are designed for the use of moving vehicles only, including automobiles, trucks, buses, and jeepneys. No parking or truck loading will be permitted on any street. Adequate parking and loading areas will be a requirement of each building site, including the administration and service area.

Drainage for surface water is provided by means of curb intakes and reinforced concrete pipes running beneath the grass strip and sidewalk area on both sides of all streets. This system also provides for sewage disposal, including outflow from septic tanks and direct flow from industrial processes, showers, etc. Drainage pipes along the radial streets are 60 centimeters in diameter; pipes along the main street are 90 centimeters in diameter and serve as collectors. Sewer pipe connections to industrial buildings could be of 30-centimeter diameter concrete pipe.

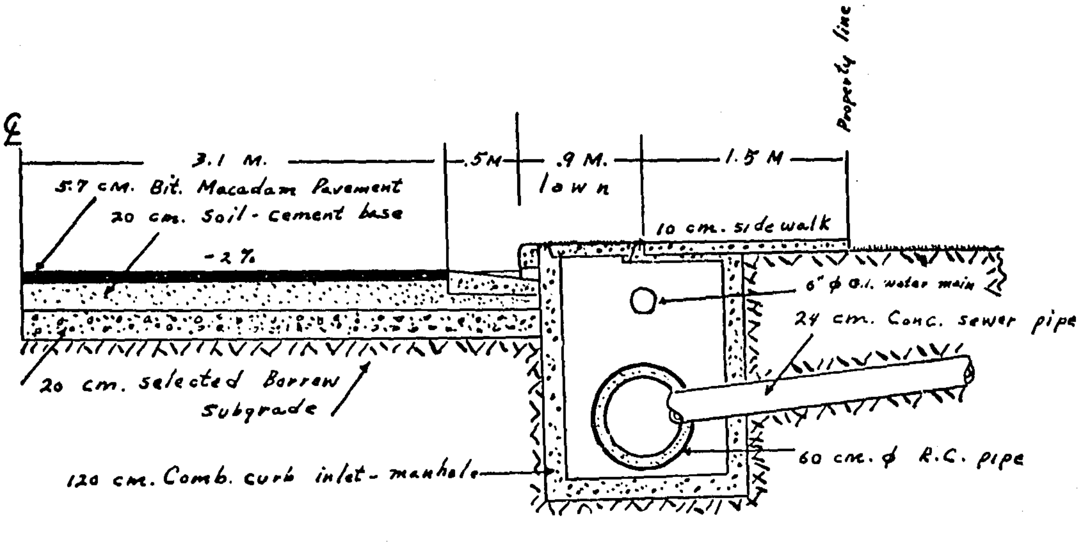
Typical cross-sectional drawings for each type of street construction, including drainage and sewer facilities, are shown in Fig. 3.

FIGURE 3

DESIGN OF STREET SECTIONS
Davao City Industrial Estate



MAIN STREET **SCALE 1:1,000**



RADIAL STREETS **SCALE 1:500**

SOURCE: Stanford Research Institute and Mindanao Development Authority.

Water Supply and Distribution

The total water supply requirement for the industrial estate will be composed of three components:

1. The domestic-type needs of employees, administration, and service facilities
2. Fire protection
3. Industrial processes

Domestic needs--for drinking, toilets, showers, lunchrooms, etc.--are likely to average about 10 gallons per person per eight-hour day throughout the industrial estate. An estimated volume of 33,850 gallons will therefore be necessary to serve this requirement upon the full development of Unit I, when a maximum employment density of 3,385 could be realized. An estimated additional volume of 53,650 gallons would be required for this type of use in the maximum development of Unit II, when a potential employment of 8,750 might be achieved on the entire estate.

Adequate fire protection, a feature that should be an important attraction for industries to locate on the estate, will require a constant available supply of 250 gallons per minute for Unit I. This source should be guaranteed by the provision of a stand-by diesel motor that would be engaged in the event of power failure or motor breakdown. Fire emergency should have first call on whatever water is available, including the storage tank reserve of 60,000 gallons, which in itself would provide an assured supply of 250 gallons per minute for up to four hours. With the development of Unit II the constant available supply for fire protection should be increased to 500 gallons per minute. The reserve storage tank capacity should then be increased to 120,000 gallons, in itself providing an assured supply of 500 gallons per minute for up to four hours.

The present water demand in Davao City for industrial processing ranges from almost none used by firms in metal fabrication, garment manufacture, and finished wood products, up to many thousands of gallons per day required by bottling plants, ice and refrigeration plants, and plywood mills. While it is impossible to predict the exact water requirements of unknown future occupants on the industrial estate, it is safe to say that there will be more small than large water users. It is also a safe estimate to provide at the very minimum a constant industrial water supply equal to or exceeding the domestic supply requirement of 10 gallons per employee per day.

A supply system composed of one well with a capacity of 400 gallons per minute and one 60,000-gallon concrete water tank would adequately provide for Unit I requirements for the domestic water needed, the recommended level of fire protection, and a residual minimum of 37,990 gallons per day for industrial processes. Another well and storage tank of the same capacities as those for Unit I would provide for the added domestic and fire protection needs of Unit II and would provide an additional minimum of 65,230 gallons per day for use in industrial processes.

In addition, water designated for fire protection, except the storage tank reserve, will be available for industrial processing use at all times other than during fire emergencies. The effective supply of industrial water available in Unit I is thus increased by 250 gallons per minute to a total of roughly 328 gallons per minute per eight-hour day, and in Unit II by 500 gallons per minute to a total of about 618 gallons per minute.

The estimated total water supply requirement of the industrial estate and the major features of the system proposed for its solution are shown in Table XXI.

In the location areas under consideration it is anticipated that a well depth of about 600 feet will be required to secure an adequate supply of potable water. A ten-inch well casing is proposed for the first 400-foot depth, and a six-inch casing for the lower 200 feet. Should treatment of water become necessary to ensure its potability, it is suggested that each well pump be equipped with a "pressure proportioner," or similar device for the injection of a liquid chlorine solution.

Water distribution lines should be of asbestos cement pipe with at least a six-inch diameter. Pipes should be of adequate thickness and quality to handle a pressure up to 160 pounds per square inch. Water distribution lines will be set under sidewalk and grass strip areas; they will be protected from sewer pipes, but maintenance access will be through sewer manholes.

Electric Power Supply and Distribution

The Davao Light and Power Company has a present excess output capacity of approximately 2,400 kw, and with its future expansion plans should be able to provide adequately for development of the industrial estate.

Table XXI

DAVAO CITY INDUSTRIAL ESTATE ESTIMATED WATER SUPPLY REQUIREMENT BY CONSTRUCTION UNIT
1965-1980

	Unit I	Unit II	Total
Number of hectares	16.4	23.6	40
Gross developable area (square meters)	135,400	208,600	344,000
Net building area (square meters)	67,700	104,300	172,000
Maximum number of employees	3,385	5,365	8,750
Daily water use per person (gallons)	10	10	10
Total daily water use (gallons)	33,850	53,650	87,500
Requirement for fire protection (gallons per minute for 4 hours)	200	250	450
Well and pumping units necessary (400 gallons per minute)	1	1	2
Storage tank (gallons)	60,000	60,000	120,000
Minimum additional water available for process use (gallons per day)	37,990	65,230	103,220
Maximum available for process use (gallons per minute)	328	290	618

Sources: Mindanao Development Authority and Stanford Research Institute.

Management of the power company has expressed considerable interest in the future industrialization of its service area and has indicated a willingness to cooperate in the estate project. The company will provide transmission facilities, transformers, and any required power supply within its capabilities. Poles, lines, and transformers will be provided at no cost to the estate or its occupants, while electric power will be charged at the standard industrial rate schedules shown in Table VIII.

Because of service economies that will accrue from the grouping of a large number of customers, the power company has also indicated a willingness to provide special safety equipment on the industrial estate. One such facility might be a circuit breaker to isolate the estate from failures occurring further out on the system line. Should a power substation be required at some future time, an adequate site could be made available on the administration and service facility land, and the power company would provide the physical plant.

The present level of electric power use by most industrial enterprises in Davao City, excluding plywood and sawmills, ranges in maximum demand between five and 30 kw, each with a daily energy utilization of from 20 to 200 kwh. The average maximum demand for firms to be situated in the industrial estate is estimated at 20 kw and the average daily energy utilization at 96 kwh. The 59 establishments projected for location in Unit I during the first five years are thus expected to require a total maximum demand of 1,180 kw, and a daily electric energy supply of 5,664 kwh.

It is proposed that street lighting in the industrial estate also be provided by the Davao Light and Power Company, which would install all necessary facilities at its own expense. In accordance with present practice in Davao City residential subdivisions, the developer or a property owners' association would be charged for the electrical energy actually used by the lighting system.

Site Development

In order to encourage sound planning and ensure the continued pleasing appearance of the industrial estate, it is recommended that buildings and industrial land uses be permitted to cover a maximum of 50 percent of the ground area of each site. It is proposed that the remaining 50 percent of each site be utilized for parking, loading, unloading, and landscaping. No residential uses should be permitted within the estate except for dormitory accommodations for the estate fire fighting and guard personnel. An example of the type of development standards and restrictions that might be imposed in order to enforce these and other desirable estate features is presented as Appendix B, Sample Development Standards and Restrictions.

It is further recommended that individual industrial buildings cover a minimum of 25 percent of the original site. This will assure a sufficient intensity of immediate development to justify the industrial estate undertaking. Adequate space will remain available for major future plant expansions on the same site, without occupants having to exceed the 50 percent maximum site coverage or move to another site.

It is proposed that paved off-street parking, loading, and unloading areas will be provided on each building site within the industrial estate. These areas should be of sufficient size and design to accommodate all automobiles, trucks, buses, and other vehicular traffic generated by the firm situated on each site, including its owners, managers, workers, visitors, suppliers, and transporters. Truck loading areas should permit simultaneous use by more than one vehicle, if necessary, and should provide space for all maneuvering and parking to be performed on the site, rather than in the street.

No truck or automobile parking or loading areas should be permitted on the side of buildings facing any street. A minimum building setback requirement should be enforced from all property lines, and the landscaping of all setback areas from street frontages should be required. Landscaping might take the form of lawns, shrubbery, or natural vegetation. Coconut trees and certain other productive crops could be retained as a combined landscaping and income-producing feature throughout the estate in setback areas, on other parts of sites, and along street rights-of-way and other community areas.

All building, parking, loading, and landscaping plans of proposed occupants should be subject to the review and approval of an architectural control committee. Building setback and coverage requirements and the maintenance of landscaping areas should be strictly enforced by means of zoning, deed and lease restrictions, and any other means deemed necessary and appropriate.

All site development and landscaping requirements should also apply to the administrative and service facility area to be provided by the developer. Landscaping of the wall surrounding the industrial estate, the entrance, median strips, and grass strips between curbs and sidewalks will also be the developer's responsibility to provide and maintain.

Walls between individual industrial buildings should be discouraged. Any fences or other devices that might be required should be provided by the individual firms and be subject to architectural control.

Industrial Buildings

Multi-unit buildings for the occupancy of one or more establishments are expected to be provided by the developer for the accommodation of small industry, particularly those requiring from 200 to 400 square meters each of factory space. They would also be expected to accommodate an estimated 30 percent of firms requiring from 500 to 1,000 square meters of space. The purpose of multi-unit or "incubator" buildings is to provide for the flexible space requirements of very small and rapidly expanding industries.

A standard size of 1,200 square meters is suggested for multi-unit factory buildings to be developed on the estate. Divisions into six modules of 200 square meters each, with removable partitions between, will provide for easy expansion from one unit to another as firms expand. Space will be available for a total accommodation of from one to six enterprises in each building. A suggested floor plan and partitioning arrangement for a typical multi-unit building situated on a 40-meter by 60-meter site is shown in Fig. 4.

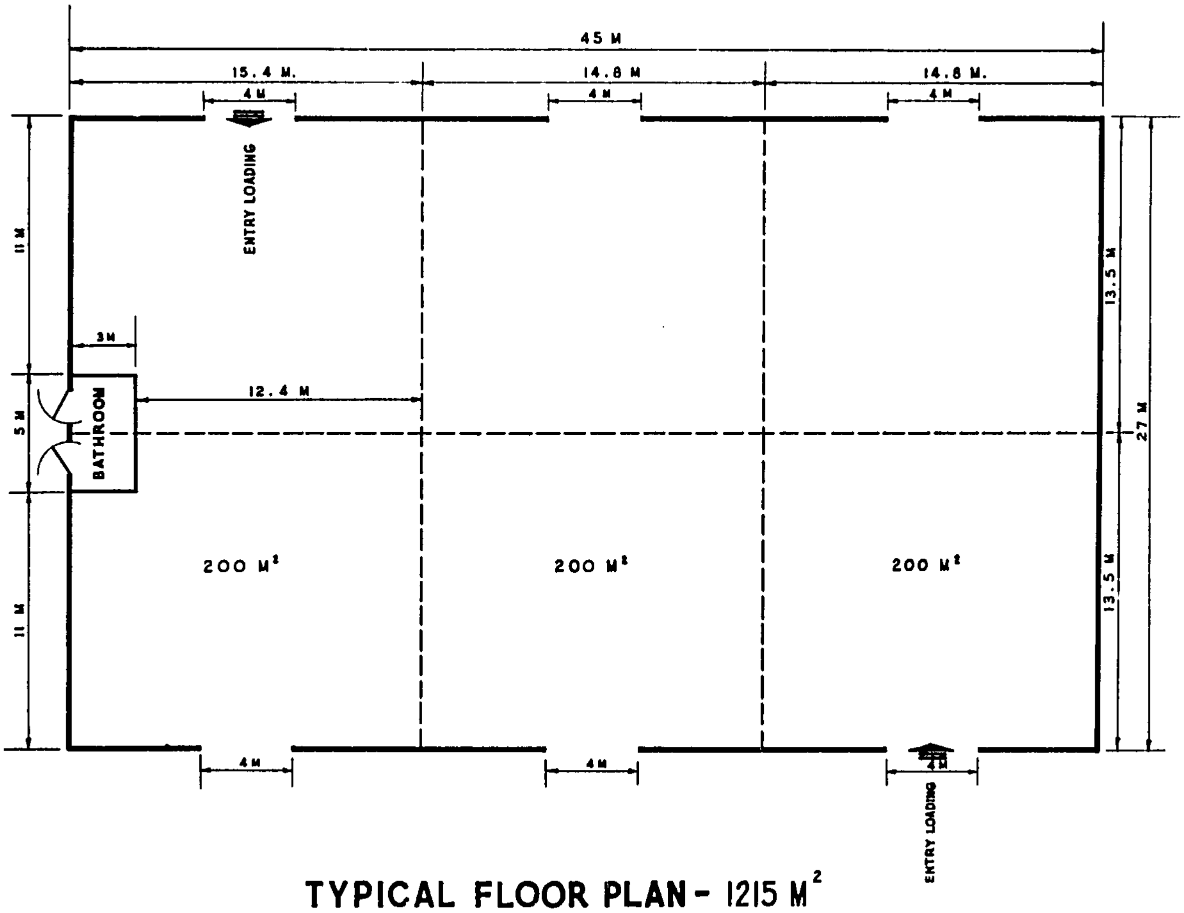
Access to establishments situated at the center and rear of multi-unit building sites could be provided by common private streets running along both sides of the lot. Where multi-unit buildings are situated on adjacent lots, these access streets or alleys could serve units in each of two buildings, as shown in Fig. 5. Multi-unit buildings should therefore be constructed in groups of two or more, wherever possible.

Larger enterprises are expected to be accommodated in individual industrial buildings provided either by the developer or by the occupant. In either case such buildings should conform to all site requirements established for the industrial estate, should be of modern appearance, and should be functionally suited to the purposes of the estate.

Individual buildings constructed by the developer should be of a general-purpose type, unless provided for long-term lease or sale to a tenant with unique building specifications. Such general-purpose buildings can be readily adapted for use by a variety of industries, and they will provide for the relatively easy turnover of space should occupants be required to leave the estate or relocate on another site.

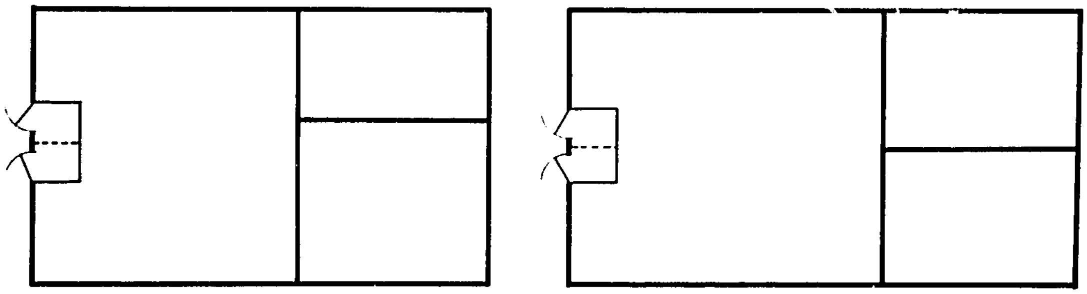
FIGURE 4

SUGGESTED MULTI-UNIT INDUSTRIAL BUILDINGS
Davao City Industrial Estate



TYPICAL FLOOR PLAN - 1215 M^2

SCALE 1:20



ONE 600 M^2 FACTORY
ONE 250 M^2 FACTORY
ONE 350 M^2 FACTORY

ONE 800 M^2 FACTORY
TWO 200 M^2 FACTORIES

ALTERNATIVE PARTITION ARRANGEMENTS

NOT TO SCALE

SOURCE: Stanford Research Institute and Mindanao Development Authority.

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and one police car. The force of about 12 men, all serving both fire and guard functions, could be supplemented by volunteers during fires and other emergencies. About 150 square meters of building area might be required.

A power substation would be provided at some future time by the utility company, but a land area of approximately 100 square meters should be reserved for this use. Water pumping and storage facilities, street, and other maintenance services would involve primarily out-door activities, including the storage of materials and equipment. A minimum of building space (but fairly large land areas) would be required.

Large areas would be available for automobile and bus parking. The administration and service area should in practice more than conform to the 50 percent maximum building coverage restriction.

A small recreation area for use by persons employed within the estate might also be provided in Unit I at a location in close proximity to the administration and service facility. A suitable piece of land of up to 1,800 square meters could be provided at some place where site utilization leaves an unusable parcel. An example is shown in Fig. 2 by the designated 20-meter by 60-meter parcel on the right side of Second Street. Such use should be considered temporary, and the land eventually would be utilized as part of an industrial building site. A permanent recreation area can be provided within the administrative and service area of Unit II.

VIII FINANCIAL FEASIBILITY

Development of an industrial estate should provide financial benefits to the firms that will utilize the land and buildings on the estate, to the project developer, and to the community where it is to be developed. Without the assurance of an economic benefit to prospective occupants, a reasonably fast and successful marketing of land and building space cannot be expected. Moreover, the promise of an adequate return to the entrepreneurs is necessary if the financial investment is to be forthcoming. The purpose of this section is to analyze the financial benefits and returns and the various financial terms and conditions on the basis of which an industrial estate can be successfully developed at Davao City.

Land Cost

One of the largest single costs in developing the industrial estate will be for land acquisition. Land values in Davao City, as in other parts of Mindanao, have increased at a fast rate due to rapid economic growth during the past five years, as property ownership is the most common form of personal investment. Land situated on or within easy access of the paved highway has been especially favored, and the very small supply of well-sited land in relation to demand has produced inflated values.

Because of the estate developer's need for good highway access and close proximity to the Poblacion, he may have to pay a high land cost. However, he need not pay the extremely inflated cost of highway frontage, which costs about four times that of immediately adjacent property on the side away from the highway. The estate can achieve almost all the advantages of highway frontage by providing its own paved access road from the highway to a location between 100 and 300 kilometers from the highway.

An analysis of present price quotations, recent sales information, and informed source estimates has been made for each of the four recommended locations described in Section VI. Accordingly, the following estimates of approximate cost have been prepared for the purchase of a suitable site of 40 hectares, at a distance of 100 to 300 meters from the National Highway, and under present conditions of land value and demand:

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Location	Estimated Cost per Square Meter	Estimated Cost of 40 Hectares
	Estimated Land Acquisition Cost (pesos)	
Matina	₱5.50	₱2,200,000
North Bajada	8.00	3,200,000
South Bajada	8.00	3,200,000
Airport/Sasa	7.00	2,800,000

The property suggested for acquisition (South Bajada) is presently a coconut plantation, and it is otherwise completely unimproved and without any access road. The right-of-way for a 200-meter access road, constructed up to the standards of the estate's main street, will require an additional 2,200 square meters of land area, at a higher average cost per square meter than those shown above.

It is assumed that no more than fair market value will be paid for the land. Appraisals might be secured by the sponsoring agency to determine such value. Large owners of suitable land areas in excess of 40 hectares should be advised, as an inducement to sell at favorable prices, of potential benefits to the value of their remaining property that should result from development of the industrial estate.

Development Costs

It is expected that on-site costs for development of the industrial estate will vary only slightly between the four suggested locations, provided a suitable 40-hectare site can be acquired. For purposes of determining financial feasibility, estimated on-site improvement costs are thus considered to be the same at each location. On-site improvement costs include the preparation of land and the construction of streets, sidewalks, drainage, an outer enclosure, a water supply and distribution system, and administrative and service facilities. Estimates of total capital cost requirements for land acquisition and development, including on-site improvements, are shown in Table XXII.

Off-site improvement costs, including road access and drainage disposal, will vary with the distance from the estate to the National Highway and to the sea or nearest watercourse. Different distances, problems, and costs will be involved at each location. To simplify the discussion,

Table XXII

ESTIMATED CAPITAL COSTS FOR LAND ACQUISITION AND DEVELOPMENT, SOUTH BAJADA SITE, DAVAO CITY INDUSTRIAL ESTATE

(Pesos)

	Unit I	Unit II	Total
Land acquisition	₱1,356,000	₱1,888,000	₱3,244,000
40 hectares at ₱8/square meter	1,312,000	1,888,000	3,200,000
2,200 square meters at ₱20/ square meter	44,000	--	44,000
On-site improvements	906,700	868,700	1,775,400
Clearance and grading[a]	20,000	25,000	45,000
Streets and drainage	425,700	438,700	864,400
Water system	202,200	219,600	421,800
Outside wall and fencing	20,000	34,000	54,000
Administrative and service[b]	112,000	90,000	202,000
Fire house and equipment	70,000	10,000	80,000
Other equipment[c]	24,000	16,000	40,000
Landscaping	32,800	35,400	68,200
Off-site improvements	185,800	--	185,800
Access road	97,800	--	97,800
Drainage outfall line	88,000	--	88,000
Total development cost	₱2,448,500	₱2,756,700	₱5,205,200
Net developable area (square meters)	135,400	208,600	344,000
Cost per square meter	₱18.08	₱13.22	₱15.13

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a. Largely included in street construction.
b. Includes buildings, except canteen.
c. Guard and maintenance vehicles, etc.

Source: Stanford Research Institute.

it is assumed herein that the recommended South Bajada site has been selected. Estimated capital costs for off-site improvements at this location are also shown in Table XXII.

Most of the cost estimates used in these and other calculations are based on current local practices and experience in the Philippines. Where recent construction cost data for Davao City were unavailable, specific cost estimates were obtained from private construction companies or appropriate public works agencies. All calculations are shown in Philippine pesos. The current exchange rate is approximately ₱3.90 to US$1.00. Approximate dollar values can be quickly found by dividing peso values by four. Figures in all financial tables have been rounded off to the nearest hundred.

As shown in Table XXII, the major development costs occur in Unit I, when most of the main street must be constructed and all off-site improvements made. Land acquisition cost, which is pro-rated between Units I and II in the table, would in practice also be expended entirely at the beginning. Including land, however, the total development cost for net leasable area is expected to be ₱18.08 per square meter in Unit I, ₱13.22 per square meter in Unit II, and an average of ₱15.13 in the estate as a whole.

Detailed breakdowns of estimated costs for the major development items--streets, drainage, and water system--are shown in Tables XXIII and XXIV.

Annual Operating Costs

An additional amount will be required each year for operational costs of the industrial estate. These will include the salaries of administrative staff, guards, and maintenance crews; the repair and replacement costs for infrastructure; and the operation of estate services, including the office, fire house, and water and drainage system. Organizational costs, site engineering, local property taxes, and insurance costs on estate properties should also be considered as operating expenses.

Amortization of the original capital cost requirements for all infrastructure, equipment, administration, and service facilities will be provided for in the return from lease and sale agreements. Depreciation reserves will accumulate for the eventual replacement of these facilities. All operation costs relating to the water and drainage systems can be offset by service charges, based on actual use. Local property taxes can be similarly applied to lease occupants on the basis of pro rata share of value.

Table XXIII

ESTIMATED COST OF STREETS AND DRAINAGE (MATERIALS AND LABOR)
DAVAO CITY INDUSTRIAL ESTATE

		Unit I		Unit II	
		Radial Streets	Main Street	Radial Streets	Main Street
1.	Clearing and subgrading	₱ 8,900	₱ 6,500	₱ 13,300	₱ 2,300
2.	Selected borrow	9,700	7,800	15,000	2,800
3.	Gravel base course	--	9,800	--	3,500
4.	Soil cement base	19,400	--	29,700	--
5.	Bituminous macadam pavement	20,800	--	32,100	--
6.	Portland cement concrete pavement	--	67,700	--	23,500
7.	Sidewalk, curb, and gutter	42,600	21,600	66,800	6,100
8.	Combined curb inlet--manhole	3,600	1,400	5,400	400
9.	Reinforced concrete drainage pipe	115,000	63,800	180,000	22,100
10.	Concrete sewer pipe	1,000	--	1,600	--
11.	Culs de sac	5,900	--	13,200	--
	Subtotal	₱226,900	₱178,600	₱357,100	₱ 60,700
12.	Contingencies (at 5 percent)	11,300	8,900	17,900	3,000
	Total	₱425,700		₱438,700	

Table XXIV

ESTIMATED COST OF WATER SYSTEM, BY CONSTRUCTION UNITS, MATERIALS, AND LABOR
DAVAO CITY INDUSTRIAL ESTATE
(Pesos)

	Unit I	Unit II
1. Deep well drilling, developing, testing, surface grouting and installation of 400 feet of 10-inch casing and 200 feet of 6-inch casing	₱ 33,000	₱ 33,000
2. Transportation of drilling equipment, personnel, and supplies	10,000	10,000
3. 400-gallon per minute electric driven pump with diesel engine standby	50,000	50,000
4. One 60,000-gallon storage tank, concrete	60,000	60,000
5. Six-inch asbestos pipes		
2,400 meters at ₱15 per meter (Unit I)	36,000	
3,400 meters at ₱15 per meter (Unit II)		51,000
6. Fire hydrants		
24 pieces at ₱150 (Unit I)	3,600	
34 pieces at ₱150 (Unit II)		5,100
Subtotal	₱192,600	₱209,100
7. Contingencies at 5 percent	9,600	10,500
Total	₱202,200	₱219,600

All other operating costs, including salaries, services, engineering, and insurance, will be charged annually to the overall operation of the estate, and this charge will represent a small percentage share of the total rental paid. It is estimated that such costs will increase annually from about ₱220,000 in the first year of development up to about ₱380,000 by the fifteenth year, when the maximum staff complement will be required.

Building Costs

All individual and multi-unit factory buildings on the estate will be constructed of permanent materials, mostly steel and concrete block. Brick and concrete tilt-up construction would also be desirable, but neither are presently used in the Davao City area because of high cost. Concrete blocks are produced by a number of local firms; cement is presently being shipped from other areas, but several plants are proposed for Mindanao, including one in Davao City. Most steel construction materials are shipped from Iligan, Manila, and Cebu. There are a number of architects and builders in Davao City with capabilities and experience in the design and construction of industrial buildings.

Buildings situated on the estate should include most or all of the following minimum characteristics and features:

1. A six-inch concrete floor slab
2. Full enclosure, with walls, doors, windows, and roof
3. A small enclosed office area
4. Two plumbing units: one with toilet, lavatory, urinal, and shower; and one with toilet and lavatory
5. Adequate natural and electric lighting
6. Enclosed wiring, and one electric outlet per 20 square meters of floor space
7. Built-in roof ventilation units
8. Modern design and functional layout

A typical, general-purpose, steel-frame building of 1,000 to 3,000 square meters, with concrete block walls, corrugated steel or aluminum roof, and the features listed above can be constructed in Davao City at an average cost of approximately ₱150 per square meter. Final building site preparation--the construction of parking and loading areas, septic tanks, water and drainage connections, and landscaping--will require an estimated average of ₱10 per square meter of building space. An added provision of five percent for contingencies would bring the total cost for all items of building construction to an estimated average of ₱168 per square meter, including all materials, labor, and fees.

Actual building costs will vary with the terrain, different types and sizes of buildings, and requirements for water, parking space, and other facilities. For purposes of financial feasibility, however, the average cost may be applied to any stage of development in which a variety of buildings are expected to be constructed.

Rental Income Requirement

For purposes of calculating the income that must be secured from building occupants, in order to recover in full the amortized investment in the industrial estate and achieve a reasonable return for the developer, a lease-only policy has been assumed.

It is expected that certain firms will wish to buy land on the estate and construct their own buildings. Such transactions will increase cash on hand and reduce the total capital investment. However, because of the unpredictability of annual sales, this factor has not been taken into consideration in the financial calculations.

The development plan presented in Section VII has been adopted, as well as the development and building costs set forth earlier in this section. The entire project of 40 hectares, situated in the South Bajada area, is considered in the analysis. A building coverage of 50 percent of each lot, a maximum utilization of 94 percent of the net developable land area, and an average building occupancy of 96 percent are also assumed.

The total capital investment in the project is established at ₱5,500,000. This is the estimated amount required for the purchase of 40 hectares, all Unit I land development expenses, and the construction of two 1,000 square-meter factories and one 1,200-meter multi-unit building. The surplus capitalization will provide for expected losses in the first two years. An additional 5 percent reserve for contingencies is provided on all construction items.

It is assumed that land development costs in Unit II are financed by borrowing, and all operating costs are financed from income received.

In the statements of estimated profit and loss shown in Tables XXV and XXVI, all further building construction after the first three factories will be financed by borrowing from commercial lending institutions. Except in the first two years when losses are incurred, it is assumed in the illustration that the depreciation reserve is applied to debt service in the following year. The cost of borrowed capital for buildings is estimated at 9 percent per annum based on 20-year amortization for the repayment of principal and interest. Depreciation on buildings is taken at 3.333 percent per year for a period of 30 years, as required by Philippine law for this type of construction. Depreciation on land improvement, streets, and utilities is taken at 5 percent per year for a period of 20 years.

The demand for factory space established in Section V is used for purposes of determining the rate of building construction and hence the revenue from land and building leases. The annual and cumulative building space requirements to meet this demand, building construction and amortization costs, and all other annual costs of the estate are shown in Table XXVII.

In addition to building rentals, income can be secured from the harvesting of coconuts on the South Bajada site, particularly during the early years when most of the land area is unoccupied. Considering the density and good quality of trees in the Bajada area, a conservatively estimated net income of ₱1,100 per hectare should be achieved, after deductions of supervisory, labor, and drying costs. Thus, in the first year of ownership, an estimated net return of ₱41,800 on a total of 38 hectares could be realized from this source. Such income would decline each year as additional land is taken out of coconut production and committed to industrial use. The income derived, however, will reduce the loss in the first two years and will contribute to profits thereafter.

Using all of the assumptions and other given factors described above, various possible economic rentals can be tested to show the financial result that would be achieved in each case over a period of years. Such tests have been prepared in detail for average building space rentals of ₱27.00 and ₱28.00 per square meter per year, or ₱2.25 and ₱2.33 per square meter per month, respectively. These rental figures would cover all costs for a fully developed site, all utilities (except use charges), modern factory space, fire and guard protection, and other estate services. The financial returns to the developer in the cases of annual rentals of ₱27.00 and ₱28.00 are shown in Tables XXV and XXVI.

Table XXV

STATEMENT OF ESTIMATED PROFIT AND LOSS, ASSUMING CAPITALIZATION OF ₱5,500,000 AND MONTHLY RENTAL OF ₱2.25 PER SQUARE METER, DAVAO CITY INDUSTRIAL ESTATE

1965-1979

Year	Mortgage Debt Service (pesos)	Mortgage Debt Service Less Depreciation[a] (pesos)	Operating Costs (pesos)	Total Costs (pesos)	Annual Rental Income[b] ₱27.0/square meter (pesos)	Coconut Income at ₱1,100/ hectare[c] (pesos)	Total Income (pesos)	Gross Profit (pesos)	Depreciation[d] (pesos)	Net Profit Before Taxes (pesos)	Percent Return[e]
1965	₱ 102,400	₱ 102,400	₱220,000	₱ 322,400	₱ 228,100	₱41,800	₱ 269,900	₱ (52,500)	₱ (85,800)	₱ --	--%
1966	310,800	225,000	230,000	455,000	523,600	39,600	563,200	108,200	(167,700)	--	--
1967	537,600	369,900	240,000	609,900	845,100	37,400	882,500	272,600	(237,100)	35,500	0.61
1968	738,700	501,600	250,000	751,600	1,130,100	35,200	1,165,300	413,700	(298,700)	115,000	2.09
1969	925,200	626,500	260,000	886,500	1,395,500	33,000	1,428,500	542,000	(355,800)	186,200	3.39
1970	1,135,500	779,700	280,000	1,059,700	1,612,200	29,700	1,641,900	582,200	(429,000)	153,200	2.79
1971	1,337,900	908,900	290,000	1,198,900	1,845,500	26,400	1,871,900	673,000	(496,800)	176,200	3.20
1972	1,520,800	1,024,000	300,000	1,324,000	2,104,700	24,200	2,128,900	804,900	(552,800)	252,100	4.58
1973	1,703,600	1,150,800	310,000	1,460,800	2,363,900	22,000	2,385,900	925,100	(608,800)	316,300	5.75
1974	1,893,800	1,285,000	320,000	1,605,000	2,633,500	19,800	2,653,300	1,048,300	(667,000)	381,300	6.93
1975	2,102,300	1,435,300	340,000	1,775,300	2,929,000	17,600	2,946,600	1,171,300	(730,800)	440,500	8.01
1976	2,310,700	1,579,900	350,000	1,929,900	3,224,400	15,400	3,239,800	1,309,900	(794,700)	515,200	9.37
1977	2,519,200	1,724,500	360,000	2,084,500	3,519,900	12,100	3,532,000	1,447,500	(858,500)	589,000	10.71
1978	2,782,500	1,924,000	370,000	2,294,000	3,893,100	8,800	3,901,900	1,607,900	(939,100)	668,800	12.16
1979	3,045,800	2,106,700	380,000	2,486,700	4,266,400	5,500	4,271,900	1,785,200	(1,019,800)	765,400	13.92

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a. Includes payment of principal and interest on borrowed funds used for annual building program and Unit II land development, less transfer of previous year's reserve for depreciation to be applied to debt services (amount is taken from capitalization during first two years).

b. Assumes 96 percent building occupancy.

c. On land not utilized for industrial buildings.

d. Depreciation at rate of 3.333 percent annually on buildings and 5.0 percent annually on other improvements.

e. Return on proposed initial capitalization of ₱5,500,000.

Source: Stanford Research Institute.

Table XXVI

STATEMENT OF ESTIMATED PROFIT AND LOSS, ASSUMING CAPITALIZATION OF ₱5,500,000 AND MONTHLY RENTAL OF ₱2.333 PER SQUARE METER, DAVAO CITY INDUSTRIAL ESTATE

1965-1979

Year	Mortgage Debt Service (pesos)	Mortgage Debt Service Less Depreciation[a] (pesos)	Operating Costs (pesos)	Total Costs (pesos)	Annual Rental Income[b] ₱28.0/square meter (pesos)	Coconut Income at ₱1,100/hectare[c] (pesos)	Total Income (pesos)	Gross Profit (pesos)	Depreciation[d] (pesos)	Net Profit Before Taxes (pesos)	Percent Return[e]
1965	₱ 102,400	₱ 102,400	₱220,000	₱ 322,400	₱ 236,500	₱41,800	₱ 278,300	₱ (44,100)	₱ (85,800)	₱ --	--%
1966	310,800	225,000	230,000	455,000	543,000	39,600	382,600	127,600	(167,700)	--	--
1967	337,600	369,900	240,000	609,900	876,300	37,400	913,700	303,800	(237,100)	66,700	1.21
1968	738,700	501,600	250,000	751,600	1,172,000	35,200	1,207,200	455,600	(298,700)	156,900	2.85
1969	925,200	626,500	260,000	886,500	1,446,100	33,000	1,479,100	592,600	(355,800)	236,800	4.31
1970	1,135,500	779,700	280,000	1,059,700	1,671,900	29,700	1,701,600	641,900	(429,000)	212,900	3.87
1971	1,337,900	908,900	290,000	1,198,900	1,913,900	26,400	1,940,300	741,400	(496,800)	244,600	4.45
1972	1,520,800	1,024,000	300,000	1,324,000	2,182,700	24,200	2,206,900	882,900	(552,800)	330,100	6.00
1973	1,703,600	1,150,800	310,000	1,460,800	2,451,500	22,000	2,473,500	1,012,700	(608,800)	403,900	7.34
1974	1,893,800	1,285,000	320,000	1,605,000	2,731,000	19,800	2,750,800	1,145,800	(667,000)	478,800	8.71
1975	2,102,300	1,435,300	340,000	1,775,300	3,037,400	17,600	3,055,000	1,279,700	(730,800)	548,900	9.98
1976	2,310,700	1,579,900	350,000	1,929,900	3,343,900	15,400	3,359,300	1,429,400	(794,700)	634,700	11.54
1977	2,519,200	1,724,500	360,000	2,084,500	3,650,300	12,100	3,662,400	1,577,900	(858,500)	719,400	12.90
1978	2,782,500	1,924,000	370,000	2,294,000	4,037,400	8,800	4,046,200	1,752,200	(939,100)	813,100	14.78
1979	3,045,800	2,106,700	380,000	2,486,700	4,424,400	5,500	4,429,900	1,943,200	(1,019,800)	923,400	16.79

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a. Includes payment of principal and interest on borrowed funds used for annual building program and Unit II land development, less transfer of previous year's reserve for depreciation to be applied to debt services (amount is taken from capitalization during first two years).

b. Assumes 96 percent building occupancy.

c. On land not utilized for industrial buildings.

d. Depreciation at rate of 3.333 percent annually on buildings and 5.0 percent annually on other improvements.

e. Return on proposed initial capitalization of ₱5,500,000.

Source: Stanford Research Institute.

Table XXVII

ESTIMATED ANNUAL COSTS OF LAND ACQUISITION, DEVELOPMENT, AND BUILDINGS
DAVAO CITY INDUSTRIAL ESTATE
1965-1979

Year	Cost of Land (pesos)	Cost of Land Development (pesos)	Cost of Buildings (pesos)	Total Land and Improvement Costs (pesos)	Annual Building Construction (square meters)	Cumulative Building Construction (square meters)
1965	₱3,244,000	₱ 729,800	₱ 1,467,400	₱ 5,441,200	8,800	8,800
1966		362,700	1,915,200	2,277,900	11,400	20,200
1967			2,083,200	2,083,200	12,400	32,600
1968			1,848,000	1,848,000	11,000	43,600
1969			1,713,600	1,713,600	10,200	53,800
1970		521,200	1,411,200	1,932,400	8,400	62,200
1971		347,500	1,512,000	1,859,500	9,000	71,200
1972			1,680,000	1,680,000	10,000	81,200
1973			1,680,000	1,680,000	10,000	91,200
1974			1,747,200	1,747,200	10,400	101,600
1975			1,915,200	1,915,200	11,400	113,000
1976			1,915,200	1,915,200	11,400	124,400
1977			1,915,200	1,915,200	11,400	135,800
1978			2,419,200	2,419,200	14,400	150,200
1979			2,419,200	2,419,200	14,400	164,600
Total	₱3,244,000	₱1,961,200	₱27,641,800	₱32,847,000	164,600	164,600

Source: Stanford Research Institute.

Financing

For purposes of this analysis there are two suggested methods of financing the industrial estate project. One is to consider the estate as a special section of the MDA under the Program Implementation Department, to be managed on a contract basis by a firm experienced in industrial land development. Under this circumstance, the complete tax exemption privilege of the MDA would apply. The special declining tax exemption privilege available to an MDA-sponsored subsidiary corporation would only start if or when the MDA should decide to incorporate the estate company, and to dispose of its interests through sale of stock in the subsidiary corporation. This suggested method would depend upon the legal interpretation of Republic Act No. 3034, which created the MDA.

The following sections of the Act are quoted, tending to support the legality of this suggested procedure: "Section 1 . . . provide leadership in the setting up of pioneering or ground-breaking industrial . . . enterprises. Section 5 (b) To provide the machinery for extending the necessary planning, management, and technical assistance to prospective and existing investors in the area. Section 5 (e) To engage in industry, agriculture, or other enterprises within the region which may be necessary or directly contributory to the socio-economic development of the region and, for this purpose, whether by itself or in cooperation with private persons or entities, to organize, finance, invest in, and operate a subsidiary corporation when such an arrangement is clearly necessary to implement the powers granted to it by this act:* Provided, that the Authority shall engage only in those activities as are in the nature of pioneering ventures or are demonstrably beyond the scope, capacity, or interest of purely private enterprise due to considerations of geography, technical or capital requirements, returns on investment, and risk. Section 6 (f) To acquire, lease, or hold such personal and real property as it deems necessary or convenient in the transaction of its business and may lease, mortgage, sell, alienate, or otherwise dispose of any of such personal and real property held by it. . . . Section 6 (l) For carrying on its business, or for the purpose of attaining or furthering any of its objectives, to perform any and all acts which a corporation, copartnership, or natural person is authorized to perform under the laws* now existing or which may be enacted hereafter. Section 12. Exemption from tax. The Authority shall be exempt from all taxes incidental to its operations."

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* Underscoring added.

The second possible method considers the initial establishment of the Davao City Industrial Estate Corporation, which would be owned partially or entirely by the MDA as a subsidiary corporation and managed under contract arrangement with an experienced firm.

It would appear to be preferable to consider the first suggestion and to establish a subsidiary corporation after the net profits are large enough to be attractive to private investors. By this method the payment of any taxes would be delayed by the number of years that the industrial estate remains as an activity of the Program Implementation Department, after which MDA's subsidiary corporation special tax exemption would apply.

It is suggested that the funds needed to purchase land, develop Unit I of the estate, and construct three buildings under the proposed building program, plus a sufficient amount of working capital to cover the expenses for the first two years be considered as capital investment. This has been estimated at ₱5,500,000. On an annual basis, this would amount to ₱4,731,400 for the first year and ₱592,700 for the second year with a contingency of ₱179,500. It is further suggested that these funds be taken out of the annual appropriations granted the MDA. The procurement of the funds under this method, whether the industrial estate be an activity of the Program Implementation Department or a wholly-owned subsidiary, would be the most advantageous method. While it would be possible for the MDA to issue bonds to finance the estate, the payment of interest on the bonds would probably make the project infeasible unless a higher rental rate is imposed. On the basis of the rents now charged in Davao City, a higher rental than suggested in this report is not recommended.

For purposes of estimating profits, in all cases, it is assumed that the buildings will be rented rather than sold. The resultant net profits achieved after taxes in each case are shown in Table XXVIII. Applicable corporate taxes in the Philippines are charged at the rate of 22 percent on the first ₱100,000 of net profit and 30 percent on the excess. The tax exemption privilege for an MDA-subsidiary corporation provides for a complete moratorium in each of the first five years, payment of 20 percent of the applicable tax for the sixth year, and successive increases of 20 percent each year up to full taxation in the tenth and succeeding years. A cash flow statement incorporating the same assumptions shown in Table XXVIII is shown in Table XXIX.

Table XXVIII

FINANCING AND TAXATION ALTERNATIVES, DAVAO CITY INDUSTRIAL ESTATE
ASSUMPTIONS: I. CAPITALIZATION OF ₱5,500,000, AND
II. MONTHLY RENTAL OF ₱2.25 PER SQUARE METER

	Alternative "A" Private Corporation				Alternative "B" MDA Subsidiary Corporation Formed at Beginning				Alternative "C" MDA Subsidiary Corporation Formed at Fifth Year			
Year	Net Profit Before Taxes[a] (pesos)	Taxes[b] (pesos)	Net Profit After Taxes (pesos)	Percent Return[c]	Net Profit Before Taxes[a] (pesos)	Taxes[d] (pesos)	Net Profit After Taxes (pesos)	Percent Return[c]	Net Profit Before Taxes[a] (pesos)	Taxes[d] (pesos)	Net Profit After Taxes (pesos)	Percent Return[c]
1965	₱ --	₱ --	₱ --	--%	₱ --	₱ --	₱ --	--%	₱ --	₱ --	₱ --	--%
1966	--	--	--	--	--	--	--	--	--	--	--	--
1967	35,500	7,800	27,000	0.49	35,500	--	35,500	0.61	35,500	--	35,500	0.61
1968	115,000	26,500	88,500	1.61	115,000	--	115,000	2.09	115,000	--	115,000	2.09
1969	186,200	47,900	138,300	2.51	186,200	--	186,200	3.39	186,200	--	186,200	3.39
1970	153,200	38,000	115,200	2.09	153,200	7,600	145,600	2.65	153,200	--	153,200	2.79
1971	176,200	44,900	131,300	2.39	176,200	17,900	158,300	2.88	176,200	--	176,200	3.20
1972	252,100	67,600	184,500	3.35	252,100	40,600	211,500	3.85	252,100	--	252,100	4.58
1973	316,500	87,000	229,500	4.17	316,500	69,600	246,900	4.49	316,500	--	316,500	5.75
1974	381,300	106,400	274,900	5.00	381,300	106,400	274,900	5.00	381,300	--	381,300	6.93
1975	440,500	124,200	316,300	5.75	440,500	124,200	316,300	5.75	440,500	24,800	415,700	7.56
1976	515,200	146,600	368,600	6.70	515,200	146,600	368,600	6.70	515,200	58,600	456,600	8.30
1977	589,000	168,700	420,300	7.64	589,000	168,700	420,300	7.64	589,000	101,200	487,800	8.87
1978	668,800	192,600	476,200	8.66	668,800	192,600	476,200	8.66	668,800	154,100	514,700	9.36
1979	765,400	221,600	543,800	9.89	765,400	221,600	543,800	9.89	765,400	221,600	543,800	9.89

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a. See Table XXV.
b. Corporate taxes charged at rate of 22 percent on first ₱100,000 of net profit, and 30 percent on all excess.
c. Return on proposed initial capitalization of ₱5,500,000.
d. MDA subsidiary corporation pays no tax for first five years, 20 percent of applicable tax in sixth year, 40 percent in seventh year, 60 percent in eighth year, 80 percent in ninth year, and full tax in tenth and each succeeding year.

Source: Stanford Research Institute.

Table XXIX

PROJECTED CASH FLOW, 1965-1979
DAVAO CITY INDUSTRIAL ESTATE
ASSUMPTIONS: I. CAPITALIZATION OF ₱5,500,000, and
II. MONTHLY RENTAL OF ₱2.25/SQUARE METER

	Sources of Funds			Application of Funds	Cash	Net Profit
Year	Cash Receipts[a] (1)	Reserve for Depreciation[a] (2)	Total (3)	Total Cost[a] (4)	in Flow (3 - 4) (5)	Before Taxes (5 - 2) (6)
1965	₱ 184,100	₱ 85,800	₱ 269,900	₱ 322,400	₱ --	₱ --
1966	395,500	167,700	563,200	455,000	108,200	--
1967	645,400	237,100	882,500	609,900	272,600	35,500
1968	866,600	298,700	1,165,300	751,600	413,700	115,000
1969	1,072,700	355,800	1,428,500	886,500	542,000	186,200
1970	1,212,900	429,000	1,641,900	1,059,700	582,200	153,200
1971	1,375,100	496,800	1,871,900	1,198,900	673,000	176,200
1972	1,576,100	552,800	2,128,900	1,324,000	804,900	252,100
1973	1,777,300	608,800	2,386,100	1,460,800	925,300	316,500
1974	1,986,300	667,000	2,653,300	1,605,000	1,048,300	381,300
1975	2,215,800	730,800	2,946,600	1,775,300	1,171 300	440,500
1976	2,445,100	794,700	3,239,800	1,929,900	1,309,900	515,200
1977	2,673,500	858,500	3,532,000	2,084,500	1,447,500	589,000
1978	2,962,800	939,100	3,901,900	2,294,000	1,607,900	668,800
1979	3,252,100	1,019,800	4,271,900	2,486,700	1,785,200	765,400

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a. See Table XXV.

Sources: Mindanao Development Authority and Stanford Research Institute.

Competitive Rental Rates

It is apparent from the calculation in Table XXV that a rental rate of ₱27.00 per square meter per year will cover all operating costs, depreciation, and amortization of buildings, and will produce a pre-tax net annual profit beginning at 0.6 percent in the third year and reaching as high as 13.9 percent in the fifteenth year on the proposed original capital investment of ₱5,500,000. This would be the most attractive profit situation, and assumes operation as an MDA tax-free branch. The slightly lower returns that would be achieved by a private corporation or an MDA subsidiary, incorporated either in the beginning or in the fifth year, are also shown in Table XXVIII.

The indicated rental rate of ₱27.00 per square meter per year, or ₱2.25 per month is considerably higher than what is now being paid for factory space by industries in Davao City. The survey of existing firms developed current rental information for land and building space ranging from about ₱0.40 per square meter per month up to ₱1.70 per square meter per month. Many establishments lease their land only, at rates principally between ₱0.30 and ₱0.50 per square meter per month, mostly for land in the Poblacion valued at ₱100 per square meter. These sites are customarily leased for a ten-year period, after which ownership of the building constructed by the occupant reverts to the land owner. This type of transaction helps to explain the reason for the low quality of the buildings and the low rents paid, because the owner of the land acquires title to a building at the end of the lease period with no personal expenditure being involved. Very few buildings in either case are constructed of permanent materials, and most are deteriorated structures situated in highly congested areas.

In addition to the provision of a superior building and pleasing environment, the industrial estate will offer its occupants the advantages and benefits of a paved concrete access road, interior streets, and sidewalks; an adequate, clean, and relatively low-cost water supply; twenty-four hour guard service and fire protection; decreased fire, theft, and liability insurance rates; modern factory buildings, well-lighted and ventilated; and a superior land site well-located to meet the special needs of industrialists.

Fire insurance rates alone should provide a substantial saving, due to the type of building construction, the uncongested area, the fire protection service, and the water supply. Wooden structures in the congested Poblacion area of Davao City presently pay a rate equal to 6 percent of the insured value of the building and its contents. Industries situated in the industrial estate would pay a fire insurance rate of

1.05 to 1.64 percent of the insured value of the building and contents, according to fire underwriter quotations.

In view of the magnitude of benefits and cost-saving services provided by a location in the industrial estate, the required rental rate does not appear to be excessive. Should an individual industrialist attempt to duplicate the site, building, and services at his own location, the amortized monthly and yearly cost would be considerably higher. Factories in similar industrial estate locations in the Manila area are known to cost four and five times as much. This factor alone would be an inducement to establish a branch in the Davao area.

It may be pointed out also that economic forces are at work in Davao City which indicate that many small industrialists, particularly those at the stage where the enterprise is growing, will find the conditions in the heavily congested areas of the Poblacion an unfavorable environment in terms of their future prospects.

The industrial survey showed that as many as eighteen of the 43 firms contacted were making or anticipating moves from the Poblacion to more favorable sites outside the Poblacion, indicating that a decentralization of enterprises is in process in the city.

The occurrence of a number of serious fires in the Poblacion in the recent past has become a factor which has discouraged enterprises in this area, aside from high insurance rates. Other factors are the condemnation of factory buildings, the termination of leases and the need to construct a new building, and the concern over possibly being forced out of the Poblacion by zoning provisions under consideration.

Summary

While the establishment of the industrial estate is believed feasible under the above assumptions, the net return to the investor may not reach a level that will be attractive to a private investor during the initial years of its operation.

As the contribution of the industrial estate to economic development of Davao City and environs, and to the development of Mindanao, will be of major importance, the low initial rate of return during the development should not be regarded as a deterent factor.

This suggests the need for the MDA to play an important role in developing the Davao City Industrial Estate. This conclusion recognizes the concepts and motives that led to the creation of the Mindanao Development Authority--that it is to provide leadership in the setting up of pioneering or ground-breaking industrial and agricultural enterprises, and to provide machinery for extending the necessary planning, management, and technical assistance to prospective and existing investors in the area. Furthermore, the MDA is to engage in pioneering ventures only that are demonstrably beyond the size, capacity, or interest of purely private enterprises, including their assessment of returns on the investments.

As discussed above, two suggested alternative approaches may be considered by the MDA in providing the entire financial requirements during the initial years; the first is to consider the estate project as a special operating unit of MDA, to be converted at a later date into a corporation in which private capital could participate; the second is to establish a wholly-owned MDA subsidiary in the first year and to dispose of the shares as the profitability becomes attractive to the private investor.

Final decision as to the better of these two alternative methods should rest with the Board of Directors. They are in the best position to know whether the required annual appropriation needed to purchase the land, make improvements, and construct buildings would be alloted by the government each year during the first two years were the estate to be considered an operating unit of MDA. They are also in a position to know whether the entire appropriation should be requested the first year for the establishment of a subsidiary corporation to be financed wholly by the MDA.

There appears to be little element of risk involved in the estate development on the proposed rental basis, since the MDA should ultimately recover its initial investment plus an annual return over and above costs. The estimates indicate that once the estate has been fully developed, the net returns should be attractive enough to enable the MDA to dispose of its interests to private investors at prices commensurate to the increased value of the land.

IX IMPLEMENTATION AND MANAGEMENT

Sponsorship of the Industrial Estate

The key question arises as to what agency, publicly or privately organized, is in the best position to promote the development of the industrial estate proposed for Davao City. To execute such a project successfully will require substantial capability represented by large financial resources, technical know-how and experience in establishing estates, flexibility in administration, and long-term continuity of management. These conditions are most likely to be met through a corporation, established specifically for the purpose, but preferably by a corporation that has had experience in developing industrial estates or residential subdivisions.

Several possibilities for sponsorship justify consideration. One logical possibility is for the Mindanao Development Authority to assume responsibility for the sponsorship of the industrial estate. In any case, it must be assumed that the MDA will play a major role in encouraging the formation of an industrial estate in Davao City, and possibly a program of broader industrial scope for other major cities in Mindanao.

In carrying out its functions of promoting the development of Mindanao, the MDA operates on the principle of cooperating with other agencies and of coordinating and focusing development projects and programs toward Mindanao. Thus the MDA acts as a catalytic and coordinating agency with respect to projects undertaken by government and by private enterprise. On projects which private enterprise has the capability to execute, the MDA's approach is that of encouraging private initiative. Such a policy is strongly endorsed in establishing an industrial estate in Davao City.

It is apparent that private initiative and capability is available in the Philippines, as evidenced by a number of organizations that have developed estates of a highly technical and artistic order. These include both industrial and residential subdivisions. Projects of these types, such as those planned, constructed, and administered in the Manila suburbs, are comparable to those that are to be found in highly industrialized countries. Companies with such experience have the capability of developing an industrial estate on a commercial basis in Davao City.

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It may be presumed that companies responsible for the development of such areas have the technical capability to execute the industrial estate proposed for Davao City.

As industrial estate development does not usually fall within the specific interests of foreign investors, it is questionable whether the project would of itself induce a foreign firm to participate without a promotional effort.

For purposes of discussion, it is suggested that the proposed corporation be called The Davao City Industrial Estate Corporation. At the time when it is established as a subsidiary corporation of the MDA, it would be exempt from all taxes for the first five years, and would pay taxes on a graduated scale for the remaining five years at the increasing rate of 20 percent per annum until the normal tax level is reached. While this tax-exemption privilege allotted to an MDA subsidiary should be used with caution so as not to discourage the entrance of private enterprise in competitive fields of endeavor, in the case of an industrial estate in Davao City it is subject to question whether private investors, of their own accord, would wish to establish a competitive industrial estate within the next ten years.

Land Acquisition

A very careful and judicious policy will need to be pursued in planning for the purchase of the land for the industrial estate. Every precaution should be taken to prevent inflation of land values. If this policy is not pursued, publicity could drive up the cost of the land to the extent that the proposed industrial estate might be infeasible. Publicity in connection with the project must necessarily be restrained, and there should never be public identification of the lands to be purchased as the site of the industrial estate.

After the decision has been made by MDA to establish the proposed estate, the acquisition of the site should be carried over expeditiously and secretly. In many instances elsewhere, industrial estate land has been bought through private buyers. This procedure should be considered by the Board of Directors. In order to maintain good will, it would seem preferable for the MDA to buy the land rather than to acquire it by exercising its power of eminent domain.

Where the land required for the site is held by several owners, the use of more than one private broker may be necessary for assembling the parcels into the tract required.

Sale and Leasing Policy

A flexible policy is suggested for the sale or lease of land and/or factories to occupants of the industrial estate. The object of the policy should be to provide for a variety of financial situations so that the special needs of the various industrialists can be met. The survey of industry undertaken in Davao City indicated that 56 percent of the establishments contacted rent both land and factories, mostly on ten-year renewable leases. This practice reveals not only a shortage of credit for long-term mortgage loans required for the purchase and development of property, but, of equal importance to this study, that there is no apparent hesitation or adverse reaction toward engaging in manufacturing on leased facilities.

The prevalence of leases in Davao City strongly suggests that, because of this competitive factor, very favorable financing policies need to be adopted if industrialists are to be attracted in sufficiently large numbers to make the proposed corporation a commercially feasible enterprise. The financial analysis in Section VIII showed that modern factory facilities on improved land with aesthetic surroundings can only be provided at a rental cost somewhat above the rentals now being charged for the substandard wooden frame structures situated in the crowded Poblacion area of Davao City. But the provision of modern facilities in a superior location and with adequate utilities should be a strong inducement to move to the estate. These facilities can be provided on the estate at a considerably lower cost than can be obtained by industrialists moving of their own accord into the less developed areas outside the Poblacion. It is considered reasonable to assume therefore that a fairly large proportion of the progressive industrialists of the Poblacion will move to the estate--subject to the condition that the area be well-sited in a location convenient to their market and business associations.

A large proportion of the applicants for space on the estate may be expected to request rental rather than purchase of the facilities in order to save money for investment in equipment, expansion of activities, and for working capital. The option of rental or purchase will naturally depend on the favorability of terms provided for the sale of land and factories. It is therefore strongly recommended that a policy be worked out to permit industrialists to buy land and/or buildings on long-term purchase plans of fifteen to twenty years with a low down payment. Should the MDA, as the major stockholder, adopt the policy of encouraging the sale of lands and buildings, it will have the desirable effect of enabling the Davao City Industrial Estate Corporation to recover its capital investment more quickly; the money received could then be plowed back into a revolving fund for expanding the estate or for making investments in the establishment of similar projects in Mindanao.

It is recognized that there is some inherent danger in applying a policy directed toward the sale of land only, especially with the practice of land speculation as it appears to prevail in the Davao area and other municipal areas throughout the Philippines. Under a favorable land purchase policy, there may be a tendency for industrial entrepreneurs to purchase land primarily for speculative purposes. To circumvent such proclivities, safeguards against such practices need to be built into the regulations.

First, there should be a condition in the sales agreement requiring the construction and operation of a factory within a reasonable period after purchase--for example, within an 18-month period--after which, if construction has not commenced, the land would be returned to the Corporation, and the original purchase price, less costs, would be returned to the buyer. A second condition, suitable as a deterrent to a rapid turnover of purchased estate property, is to charge the seller a turnover fee of possibly 10 percent of the sales price. A third requirement should be that all buyers of property sold by an occupant on the estate must be approved by the Corporation. This is to ensure that all prospective tenants will be in a position to comply with the applicable estate rules, which are so designed that all tenants are compatible.

The favorable rental and purchase policies described above should be designed primarily for the benefit of firms in the smaller size categories, particularly those having less than 50 workers, on the presumption that their financial resources are limited. This size limitation should not be viewed as a restriction, but rather as an expression of the greater need for financial assistance likely to be experienced by small industrial firms. Since the focus of the proposed estate is to provide special incentives for the development of small- and medium-scale industry, policies need to be designed to give this sector special attention.

Industrial applicants of 50 or more workers, and those with a greater financial capability, are more likely to buy rather than rent the industrial estate property. Also, such firms are more likely to be in a position to make larger down payments in purchasing the property.

Building Construction Policy

The Davao City Industrial Estate Corporation should be prepared to undertake a substantial factory construction program. Rather than build up its own technical staff, it would be preferable to contract with private architects for the designing of the buildings, and with private contractors for construction as and when needed.

A certain degree of assurance regarding demand for building space will be necessary before undertaking the construction of factory buildings. At the beginning of the project it would be desirable to build at least one multi-unit and two individual buildings in each of the three smaller size categories suggested in Section VII in order to demonstrate to prospective tenants what the estate will be like. Particularly in the early stage, when demand is likely to be more certain, a policy should be followed of always having on hand about 1,200 square meters of multi-unit space and two single buildings in these smaller sizes--that is, up to 1,000 square meters per factory--ready for industrialists to lease or buy without delay. This policy should be a major inducement in attracting tenants to the estate.

For factories over 1,000 square meters, the demand for building space will be less predictable, and construction should be undertaken by the Corporation only after reaching agreement with a tenant. Factories requiring larger areas of floor space are more likely to require special design features, and may wish to build their own facilities. They should be given this opportunity to plan the special features to meet their requirements. However, the building plans should conform to the general regulations for construction and layout established by the Corporation. Moreover, the designs proposed should conform and contribute to the aesthetic standards set for the industrial community as a whole.

Individual factory buildings might be constructed by user industries or by the developer of the estate. While there are advantages to either approach, the most favorable situation for rapid and successful development would be the adoption of a highly flexible policy. The developer should be prepared to provide land only, building space only, or a "package" of land and building. Alternate financial terms should also be available, including lease, lease-purchase, and installment purchase programs.

It would be desirable if those establishments that are financially able could be encouraged to buy or lease individual sites and construct their own factory buildings. Buildings constructed by individual industries on leased or owned land within the estate should conform to the overall land use and site development controls of the estate.

Disposition of Facilities on the Estate

Once the land has been purchased, it is recommended that MDA delay further action for development, including the sale of plots, until the layout has been approved and all details in regard to terms and conditions of purchase, rental, and other matters relating to occupancy have been approved by the Corporation and are ready to be announced to the public. For satisfactorily marketing space on the estate, the Corporation should prepare a comprehensive and attractive brochure covering all features of the project, including the object of the estate, its location, the layout plan, public utilities and amenities to be provided, industrial restrictions, building construction policies, terms of sale and lease agreements, protective features of the estate, the timing of occupancy, and other aspects of management policy.

Advertising and personal sales contact should be the next step in informing the investing public of the plans to establish the first industrial estate for the industrial development of Mindanao in Davao City.

Well-directed advertising and extensive news releases should be carried in the business sections of major newspapers of the larger cities in the country, especially in Metropolitan Manila and Cebu. There should be good public relations-type coverage in the cities of Mindanao. It will be particularly important to acquaint the large industrialists of Metropolitan Manila of the investment opportunity provided on the industrial estate in Davao City, the major urban center of Mindanao. As explained in Section V, the success of the estate from a financial viewpoint may well depend upon attracting a sufficient number of branch plants or new investments, especially of the larger types, from the industrialized areas of the Philippines. This emphasizes the point that terms and conditions must be made sufficiently attractive for estate development, as Davao City will be in competition with other urban areas, some of which may have more advantages in such aspects as location, transport costs, and raw materials.

The foregoing suggestion regarding desirability of initial advertising should not be over-emphasized, as the main purpose would be to inform the public factually about the investment opportunity and to attract potential investors for definitive talks about the project with the MDA staff. There is no substitute for such exploratory discussions. These might normally take place after industrialists have submitted preliminary applications requested in the initial publicity. The MDA management should by no means maintain a passive approach; rather it should actively contact industrialists considered to be potential investors in the industrial estate and capable of adding substantially to the desired impact in Davao City. This applies with special emphasis to firms able to establish branch plants.

After firms have decided that they would like to establish an enterprise on the estate, they should be required to submit an application for space which would be a legal document recording not only their land and factory space requirements, but other vital information, such as the level of the investment proposed, the products manufactured, the amount of electricity and water required, as well as their needs in regard to parking space and docking facilities, and perhaps special services desired. A down payment should be required.

Management Organization

The administrative staff and the organizational arrangements of the management of the Davao City Industrial Estate Corporation should be kept as simple as possible, largely for the reason that it is essential to prevent any undue financial burden during the development period of the estate. Excessive personnel and administration costs could detract seriously from its financial success. A suggested organization is shown in Fig. 6.

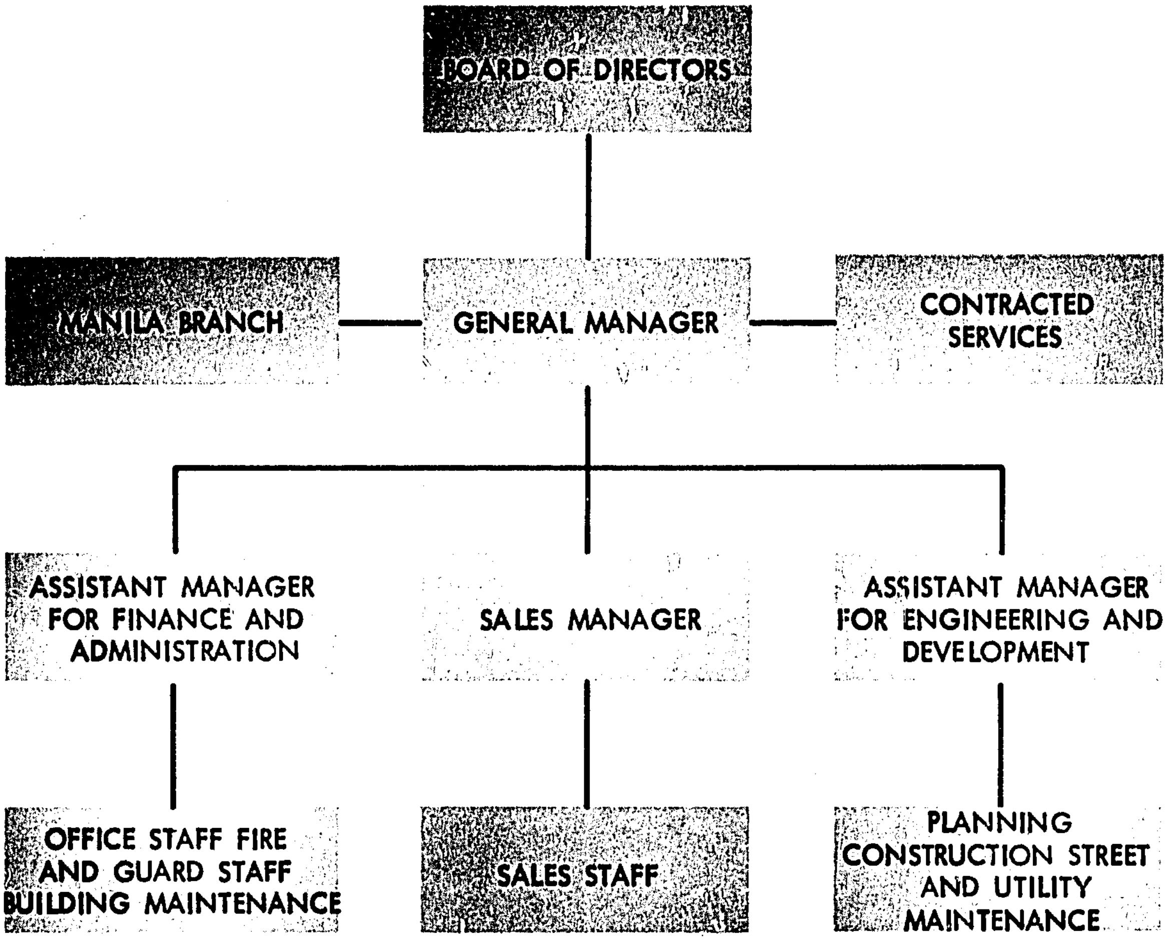
The chief executive and administrator of the local staff office in Davao City would be full-time General Manager. He would require one assistant for Finance and Administration, and one assistant for Engineering and Development. A Sales Manager may also be needed, depending on the rate at which property on the estate is demanded. Two secretaries should be sufficient to provide the beginning staff complement needed in the local office of the development corporation. All other staff services, including legal and accounting, could be provided by contract, at least in the early stages.

An additional office will be required in Manila, from which a sales staff consisting of one or two executives will make direct contacts with industrial prospects. The Manila sales office would be under direct supervision of the General Manager.

The General Manager should be empowered to carry out the policy decisions and purposes of the Board of Directors of the Davao City Industrial Estate Corporation. The General Manager should have the status and compensation of a senior executive in a large industrial concern. He should carry the final responsibility for day-to-day operations of the office. With the approval of the Board of Directors, the General Manager should be responsible for the selection and supervision of staff, the negotiation of contracts for planning and physical development, the negotiation of sales and lease agreements, and the enforcement of restrictions.

FIGURE 6

DAVAO CITY INDUSTRIAL ESTATE CORPORATION


BOARD OF DIRECTORS
MANILA BRANCH
GENERAL MANAGER
CONTRACTED SERVICES
ASSISTANT MANAGER FOR FINANCE AND ADMINISTRATION
SALES MANAGER
ASSISTANT MANAGER FOR ENGINEERING AND DEVELOPMENT
OFFICE STAFF FIRE AND GUARD STAFF BUILDING MAINTENANCE
SALES STAFF
PLANNING CONSTRUCTION STREET AND UTILITY MAINTENANCE

SOURCE: Stanford Research Institute.

In addition, the General Manager should be responsible for community relations and relations with estate tenants, dealings with utility companies, and relations with government and civic organizations.

The Assistant Manager for Finance and Administration will be responsible for the collection of rents and other payments, maintenance of all buildings and facilities, and supervision of the fire and guard force and other estate employees. He will also serve as purchasing agent, disbursement officer, and office manager.

The Assistant Manager for Engineering and Development should be a civil engineer. He will be responsible for the physical development of the industrial estate, according to the designs approved by the Board of Directors. He will exercise technical supervision over the construction work on the estate pertaining to land improvement, installation of utilities, and construction of roads and buildings. He will also assist the General Manager in contracting for services, the supervision of such contracts, and in working with tenants on the technical problems of adapting to the estate.

While the Sales Manager is a key person in the development of an industrial estate, in the early stages this activity may be provided by the General Manager. The Sales Manager is directly in charge of advertising, promotion, contracts, sales, and leases. This job should not be permanently filled until clear title is held to the land and physical development of the site and construction of initial factory buildings are under way.

A considerably larger staff may be required as development progresses and results become apparent.

Steps in Project Implementation

To assist the industrial estate development agency, the following is a suggested outline of the various tasks that need to be undertaken in carrying out the project. These tasks have been arranged in phases which represent time periods over which the tasks need to be accomplished. Obviously, there is a need for flexibility, so that no hard and fast arrangement of tasks is possible.

Phase I - General Policy Decisions Relating to Implementation

1. Appointment of a steering committee to study the SRI report to identify issues on which major decisions are required by MDA

2. Decision on the appropriate agency to establish the industrial estate
3. Selection of the site of the industrial estate
4. Formulation of general policies governing development of the estate

Phase II - Sponsorship, Land Acquisition and Design

1. Formation or selection of the industrial estate development corporation
2. Acquisition of the estate site
3. Master planning and detailed design of the estate site
4. Design of public installations and factories

Phase III - Development of the Project Site

1. Selection of the construction company
2. Land improvements
3. Road construction
4. Installation of public utilities
5. Determination of the financial terms and conditions pertaining to the disposition of the land after actual expenditures have been made and the development has been completed

Phase IV - Construction of Buildings

1. Advance construction of initial multi-unit buildings
2. Advance construction of small single-unit factories
3. Construction of administration building
4. Determination of financial terms and conditions pertaining to disposition of land and buildings

Phase V - Selection of Industrial Occupants (Overlaps Phase IV in part)

1. Prepare comprehensive sales brochure
2. Invite tentative applications so as to test demand for planning purposes
3. Invite serious applications with earnest money and detailed outline of industrial projects proposed, including requirements for space and utilities
4. Select final down payment and sign occupancy and sales/rental agreements
5. Industrial concerns begin occupying their properties

X SOME STRATEGIC CONSIDERATIONS OF INDUSTRIAL ESTATE DEVELOPMENT PROPOSAL FOR AN INDUSTRIAL COMPLEX IN DAVAO CITY

In approaching the development of an industrial estate in Mindanao, the Mindanao Development Authority should have the conception of eventually creating an industrial complex in Davao City. By this is meant the creation of a complex in which industrial enterprises in a range of different sizes--small, medium, and large--would be operating in close association, and with the opportunity of establishing forward and backward linkage. A complex of plants of different sizes, types of industry, and industrial capability will do much to develop a pool of high-level technical and management skills in the industrial community which should be an important inducement in attracting more firms to the area. A complex would facilitate the growth of a strong industrial community capable of extending the local production of goods and services, many of which are imported today. It would be a base from which the further industrialization of Mindanao could proceed.

Restrictions in the Selection of Applicants

A wide degree of latitude and a range of possibilities are open in attracting industries to the industrial estate. Appendix B presents sample development standards and restrictions which may be useful to the estate management in reviewing the applications of the industrialists interested in becoming established on the estate. There is no need to repeat or summarize the ideas expressed there, except to make the point that every effort should be made to set a high tone of quality by the types of enterprises accepted on the estate and the standards of performance to which these enterprises are expected to adhere. The estate should be made attractive, and the enterprises selected should be compatible. There should be no specific list of industries to be excluded. Rather, enterprises should be excluded only by their own inability to meet certain criteria. If the standards can be met by the applicant enterprise, and if it can demonstrate that its operations can be made acceptable, then it should be given the privilege of settling on the estate. In regard to performance standards, therefore, particular attention needs to be given to such factors as smoke, dust, noise, vibration, and odor, and the danger from explosions and fire hazards which would originate from the applicant's enterprise.

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On the basis of these considerations, industries such as charcoal briquette manufacturers, saw mills, forges, tanneries, and certain chemical industries will need to be evaluated to determine whether they meet the standards established for location on the estate.

In approving establishments for the estate, some problems may arise in the case of enterprises that use unusually large amounts of water and electricity, or which require the disposal of excessively large amounts of effluent. Such cases can frequently be handled if sufficient advance notice is given, so that the required capacity can be built into the estate utilities; the firm could assist the Corporation financially where the additional investment is large. Another possibility is for the firm to build its own facilities. Each case would have to be handled on its merits. If plants with the need for special facilities are willing to invest in such facilities in whole or part, they could become eligible candidates for the estate, assuming that they are otherwise acceptable.

Structure of Davao Industry

Before proceeding to a discussion of the question of the kind of industry that might be attracted to the Davao City Industrial Estate, a brief description of the city's existing industrial structure may provide a meaningful background.

Industry in Davao City is predominantly based upon products of the lumbering industry. The 1963 Census Survey indicated that 2,556 workers in manufacturing were employed in the manufacture of wood products, excluding furniture. Considering the number employed in furniture manufacturing, total employment contributed by the wood products industry is estimated to have been about 2,700 workers, or about half of the 5,261 employed in manufacturing in Davao City in all establishments with five or more workers. Employment in the food and beverage industry contributed about 15 percent, or 824 workers. The manufacture of textile products, including wearing apparel, provided employment for 435 workers, or about 8 percent of the total. A comparatively small amount of employment was contributed by the metal and machinery products group, with 306 workers, or 5 percent of the total. The general manufacturing group had the second largest employment, with 987 workers, or 19 percent.

The Census recorded 211 manufacturing establishments, but most of these are small units. For example, 75 percent, or 158 establishments, employed less than 10 workers, but these employed only 21 percent of all workers. Understanding the size distribution of establishments helps greatly in understanding the structure of Davao City industry. Most of the wood products industry, excluding furniture, is concentrated in larger establishments. Twelve of these had 10 or more workers but employed 48 percent of all Davao City industry. Quite in contrast, only two textile firms out of 57 had 10 or more workers; in fact, the textile industry consists principally of tailoring shops which retail directly to the public. The miscellaneous manufacturing group is similar in that 14 of the 15 establishments have fewer than 10 workers, of which most are engaged in manufacturing furniture.

The bakery industry is another in which small establishments predominate, as 32 of the 47 plants had less than 10 workers. Most of the bakery establishments are very small and engage in retailing. The same applies to the metal products industry in which 13 of 22 establishments had fewer than 10 employees. Most of these plants are engaged in tinsmithing of tinplate for the manufacture of water tanks and water containers of various sorts, jalousies, window frames, grill work, and related items.

In the area outside Davao City, located in the Province, are another six wood product manufacturing plants, all having over ten workers, and employing a total labor force of 455. In contrast, all the three additional plants in the metal products group and 31 in textiles had less than 10 workers. In the food group 19 of 23 additional plants in the Province were in the small (5-9) size group. Similarly, in the general manufacturing group, 18 of 23 were in the smaller size group. In the Province as a whole there were 288 manufacturing establishments, 77 in the area of Davao City, but 62 of these had fewer than 10 workers.

It will be apparent from this description that about half of the employees in industry, and most of the manufacturing establishments in Davao City today, are engaged in providing for the consumption and services required by the inhabitants. The logging and plywood industry, which operates on a large scale, is engaged in providing materials primarily for the export market. The logs are exported to Taiwan, Japan, and Korea; the plywood is exported to a wider market, including the United States. While the present industrial base is small, there is the presence of entrepreneurship in a number of industries which can be expanded to produce an increasing range of goods and services required by the community for household and industrial use.

Implementing the Conception of an Industrial Complex

A flexible policy should be pursued in implementing the concept of an industrial complex as industry is attracted to the industrial estate.

If a greater demand is expressed in the estate by larger types of enterprises than was anticipated in this report, then the layout of the estate may require modification. Moreover, if the demand expressed by large enterprises is unexpectedly great, and if these enterprises require more than the usual amount of land and/or factory space, a substantial enlargement of the amount of land devoted to the project may be necessary.

In pursuing the conception of an industrial complex, it is strongly urged that the industrial estate should be located on property having direct access to the sea in order to provide for transportation and other purposes. One approach in which a coastal location has meaning would provide for the special requirements of the logging and wood products industry. At present several logging companies operating in Davao City maintain log-storage ponds on the coast. In a number of instances the logs are towed in rafts to the port for loading on export vessels; in other cases, the logs are moved directly into plywood plants located nearby.

A similar arrangement might be considered in establishing the estate, whereby an allocation of land on the coast might be set aside specifically for plywood plants. Logging companies, now only exporting logs, may be expected to get into the plywood business over the next decade and into other wood processing industries, so that this kind of estate planning would provide a desirable location for their new operations. The Davao City plywood industry is now at the stage where investments are being planned for the manufacture of hardboard, including chipboard, and other products based on the use of waste from the plywood industry. Beginnings along this line have already been made in the heart of the plywood industry in Butuan City and in Zamboanga City.

A chipboard plant, for example, requires no more than one hectare of land and would fit very well on an industrial estate. Plywood plants could be accommodated on more spacious grounds, but they do not usually require more than two to three hectares.

In this conception of the layout of the industrial complex, log ponds could be located on the coast, and the plywood and hardboard plants located next to them. There could be a progressive arrangement of plants in decreasing sizes up to the area near the National Highway, where the small-sized enterprises in multi-unit buildings would be located.

Besides plywood and hardboard products there should be emphasis in the estate on the manufacture of other end products of the wood industry. The location of such industries, because of the noise involved, will need to be examined by the management of the project. Box manufacturing may be in the same category. Box components could be manufactured and assembled on the spot or packaged knocked down for shipment to other areas. Another wood industry, which already has a beginning in Davao City, is the manufacture of furniture. However, many improved designs must be introduced into this industry if it is expected to produce furniture for export. Other industrial enterprises based upon the end products of the wood industry conceivably could have a future in Davao City and the surrounding areas.

In locating industries that utilize local resources, other than those which may develop in the area, the management of the estate should look largely to firms in Metropolitan Manila interested in establishing branch plants. In this regard, the management of the estate should be active and creative in approach and should seek out those manufacturers in the Manila area who could establish branch plants in which the economics of their projects are distinctly in their favor. The strong interest indicated by firms included in the survey of Metropolitan Manila in the development of the resources of Mindanao shows that these firms realize the opportunities in the expanding Mindanao market.

In reporting on the industrial survey in Metropolitan Manila in Section V, it was noted that about half the enterprises who had investment plans in Mindanao definitely have Davao City in mind as a location, and that 45 percent of all proposed investments would probably go to Davao City should an industrial estate be established there. However, these proposed investments are not certain, but rather conditional. Some, for example, are based on availability of such agricultural products as fruits and vegetables to be processed, or latex from rubber plantations. In other cases the investment is conditional on a fuller evaluation of the market for the product or service under consideration. (It would not be appropriate to mention in this report specific investments planned by these firms, as this would reveal their intentions to competitors.) Some industrial possibilities proposed include a close linkage or dependence upon the wood industries now existing in Davao City. Closely related are industries producing products for housing and house furnishings. Another possibility is the production of items for the automobile industry. The food industry should have good possibilities for further development, considering the potential expansion of agriculture possible in the Davao River Valley and other parts of Davao Province not too far from the Poblacion.

There should be some study as to whether it is feasible to establish a hemp rope and twine factory based upon the abaca industry, which appears to have a superior natural advantage in the Davao region. At the present time the abaca fiber is largely being processed elsewhere.

Only two or three small shops are manufacturing ready-made garments. Numerous small tailoring shops exist in Davao City. It is conceivable that with proper support some of these small shops could expand into larger-sized enterprises to manufacture ready-made clothes for the expanding local market, which is presently supplied from Manila.

The mechanical engineering industries are still comparatively underdeveloped in Davao City. Most of the firms in this type of activity are engaged in tinsmithing and the manufacture of water tanks and other containers. The future well-being of Davao's manufacturing industry is highly dependent on an expansion of the services and the products of the engineering and mechanical industries. Establishment of the industrial estate should provide a strong incentive for their expansion.

The manufacture of agricultural implements should find a good market in view of the extensive development of agriculture in the nearby hinterland. The Davao City area is already well supplied by distributors of agricultural equipment including tractors and implements. Local plants should be able to find a market for the manufacture and/or assembly of selected implements and equipment for the Mindanao agricultural market. The existence of an engineering and metal fabricating industry would provide strong assistance in establishing this industry.

The production of coconuts is important in the Davao area, as it is in most sections of Mindanao, and opportunities should exist for the dessication of coconuts and the processing of coir and copra into a variety of products including brushes, rugs, coconut oil, and coconut meal. The processing of coconut oil into soaps, glycerine, and other by-products of the vegetable oil industry may depend upon the solution of certain export and import policies of the government as well as on the possibility of establishing plants sufficiently large to compete with European plants.

In making the estimates of demand for industrial space, no specific provision was made for warehousing. The developer of the industrial estate might well give attention to attracting private warehousing companies, including bonded warehouses. These might include branch facilities from Manila. Bonded warehouses should be particularly useful to industrialists on the estate who would benefit from convenient nearby storage of raw materials and finished goods, and who could reduce working capital pressures by borrowing on their warehouse receipts.

Strategy in Industrializing Mindanao

The industrialization of Mindanao needs to be conceived in a progressive step-by-step approach. It needs to be done in stages and over a period of time. It is a task in which government and private industry both have important roles. Today, in the absence of an adequate infrastructure, only large enterprises with substantial financial capability can enter Mindanao to develop its natural resources. It is the function of the government to move vigorously in building the infrastructure which is badly needed to attract industry. It is especially important that the growing coastal cities which will be the industrial complexes of the future be linked more effectively by roads. The ports need to be provided with improved and enlarged docks with modern handling facilities able to handle inter-ocean traffic. This will tend to reduce the dependence on Manila and enable the port cities to trade on world markets.

The improvement of inter-city and urban roads is the first prerequisite. The shortage of electricity is a major handicap, discouraging to the establishment of industry, particularly from outside the region. Another weakness is the inadequate municipal utilities, such as water supplies and sewage disposal. The national agencies charged with the responsibility for providing roads and bridges, electricity, water supplies, and sewage disposal are handicapped by insufficient investment funds and barely enough funds for maintenance.

The Mindanao Development Authority can do much toward attracting industry by working with the national development agencies in coordinating and focusing programs in stepping up their investments in Mindanao.

The recommendation of this report is to make Davao City the first industrial complex using the device of an industrial estate for small and medium-scale industry as the means for establishing a strong industrial nucleus, and to attract as much large-scale industry from Manila as possible. A similar approach can be used in other cities as soon as there is evidence of expanding markets.

Iligan City is an urban center where a different approach should be used in view of the future availability of a large block of electricity for industrial development. In this case the power resource should be the base for achieving the industrial agglomeration in that community. Eventually, as the small industry base grows and as large enterprises require more supporting products and industries, there should then be a market for establishing a minimum-sized industrial estate.

Wherever possible, industrial complexes should center on some natural resource, such as power, iron and steel, nickel, and aluminum. In the absence of such natural resources to use as the basis for agglomeration, industrial estates should be established in the cities found to have adequate growth potential. Industrial estates should be used as the nucleus for industrial complexes. They should assist in speeding up the development of industry by stimulating local entrepreneurship and by attracting industry from industrial concentrations elsewhere.

Appendix A

MISCELLANEOUS TABLES

Table XXX

POPULATION OF THE PHILIPPINES, BY PROVINCE AND REGION CENSUSES OF 1903-60, AND MEDIUM ASSUMPTION PROJECTION TO 1975

Projection Based on Constant Ratio of Provincial to National Population

(Population in Thousands)

	1903	1918	1939	1948	1960	1965	1970	1975
Philippines	7,635	10,314	16,000	19,234	27,088	31,939	37,985	45,527
Percent increase		35.08%	55.13%	20.21%	40.83%	17.91%	18.93%	19.85%
Region O - Metropolitan Manila	220	285	623	984	1,139	1,339	1,582	1,876
Percent increase		29.73%	118.53%	57.81%	15.72%			
Percent of Philippines	2.88%	2.77%	3.90%	5.12%	4.20%	4.20%	4.20%	4.20%
Region I - Ilocos and Mountain	695	911	1,102	1,129	1,469	1,731	2,050	2,439
Percent increase		31.39%	20.77%	2.57%	30.09%			
Percent of Philippines	9.09%	8.83%	6.89%	5.88%	5.42%	5.42%	5.42%	5.42%
Region II - Cagayan Valley	252	348	599	669	1,035	1,221	1,435	1,743
Percent increase		37.85%	72.29%	11.47%	54.82%			
Percent of Philippines	3.38%	3.75%	3.48%	3.82%	3.65%	3.85%	3.85%	3.85%
Region III - Central Luzon	1,267	1,614	2,324	2,775	3,691	4,352	5,176	6,203
Percent increase		27.48%	44.11%	19.38%	33.02%			
Percent of Philippines	16.58%	15.66%	14.52%	14.43%	13.63%	13.63%	13.63%	13.63%
Region IV - Southern Luzon	971	1,333	2,071	2,544	4,233	4,997	5,965	7,194
Percent increase		37.55%	55.18%	22.85%	66.38%			
Percent of Philippines	2.70%	12.94%	12.94%	13.22%	15.62%	15.62%	15.62%	15.62%
Region V - Bicol	642	841	1,347	1,667	2,364	2,787	3,317	3,982
Percent increase		30.45%	60.31%	23.75%	41.78%			
Percent of Philippines	8.44%	8.14%	8.42%	8.66%	8.72%	8.72%	8.72%	8.72%
Region VI - Western Visayas	1,339	1,685	2,668	3,082	3,807	4,485	5,322	6,352
Percent increase		25.70%	58.37%	15.57%	23.52%			
Percent of Philippines	17.54%	16.34%	16.67%	16.02%	14.06%	14.06%	14.06%	14.06%
Region VII - Eastern Visayas	1,578	2,191	3,021	3,440	3,966	4,666	5,516	6,547
Percent increase		38.83%	37.91%	13.86%	15.27%			
Percent of Philippines	20.67%	21.24%	18.88%	17.89%	14.64%	14.64%	14.64%	14.64%
Region VIII - Southwestern Mindanao	380	599	1,195	1,568	3,273	3,868	4,631	5,610
Percent increase		57.61%	99.28%	19.15%	108.81%			
Percent of Philippines	4.98%	5.80%	7.47%	8.15%	12.09%	12.09%	12.09%	12.09%
Cotabato	126	172	299	440	1,029	1,216	1,453	1,755
Percent increase		36.78%	73.82%	47.08%	134.07%			
Percent of Philippines	1.65%	1.67%	1.87%	2.29%	3.80%	3.80%	3.80%	3.80%
Davao	65	104	293	365	893	1,054	1,258	1,516
Percent increase		64.04%	117.25%	24.69%	144.76%			
Percent of Philippines	0.86%	1.04%	1.83%	1.90%	3.30%	3.30%	3.30%	3.30%
Sulu	91	173	247	241	327	385	458	550
Percent increase		90.12%	43.03%	5.46%	35.74%			
Percent of Philippines	1.19%	1.67%	1.54%	1.24%	1.21%	1.21%	1.21%	1.21%
Zamboanga del Norte	17	57	139	168	282	332	395	474
Percent increase		23.38%	14.25%	77.87%	67.81%			
Percent of Philippines	0.22%	0.55%	0.87%	0.87%	1.04%	1.04%	1.04%	1.04%
Zamboanga del Sur	81	90	217	354	742	881	1,067	1,315
Percent increase		11.30%	141.05%	63.14%	52.28%			
Percent of Philippines	1.07%	0.87%	1.36%	1.84%	2.74%	2.74%	2.74%	2.74%

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Table XXX (Concluded)

	1903	1918	1939	1948	1960	1965	1970	1975
Region IX - Northeastern Mindanao	290	507	1,050	1,376	2,111	2,493	2,973	3,581
Percent increase		73.80%	108.59%	31.08%	53.43%			
Percent of Philippines	3.81%	4.90%	6.56%	7.15%	7.80%	7.80%	7.80%	7.80%
Agusan	31	45	99	126	271	320	383	463
Percent increase		46.15%	121.33%	27.09%	11.43%			
Percent of Philippines	0.40%	0.43%	0.062%	0.66%	1.00%	1.00%	1.00%	1.00%
Bukidnon	21	40	58	63	194	231	283	354
Percent increase		87.52%	40.05%	10.26%	206.24%			
Percent of Philippines	0.28%	0.38%	0.36%	0.33%	0.72%	0.72%	0.72%	0.72%
Lanao del Norte	22	21	99	139	271	320	384	468
Percent increase		3.54%	370.26%	32.36%	105.62%			
Percent of Philippines	2.29%	0.20%	0.62%	0.68%	1.00%	1.00%	1.00%	1.00%
Lanao del Sur	0.164	70	144	205	378	48	539	658
Percent increase		42,775.0%	104.80%	47.83%	78.19%			
Percent of Philippines	0.00002%	0.67%	0.90%	1.10%	1.40%	1.40%	1.40%	1.40%
Misamis Occidental	45	81	210	208	248	292	343	404
Percent increase		78.50%	159.28%	0.99%	19.65%			
Percent of Philippines	0.59%	0.79%	1.31%	1.08%	0.92%	0.92%	0.92%	0.92%
Misamis Oriental	87	127	214	370	389	457	538	634
Percent increase		43.35%	68.64%	72.89%	51.24%			
Percent of Philippines	1.14%	1.23%	1.34%	1.92%	1.43%	1.43%	1.43%	1.43%
Surigao del Norte	--	67	126	155	195	230	272	324
Percent increase		88.65%	23.10%	25.79%				
Percent of Philippines	0.65	0.79%	0.81%	0.72%	0.72%	0.72%	0.72%	0.72%
Surigao del Sur	--	56	100	110	165	195	232	278
Percent increase		77.7%	77.72%	99.70%	50.08%			
Percent of Philippines		0.55%	0.62%	0.57%	0.61%	0.61%	0.61%	0.61%
Regions VIII and IX - Mindanao	670	1,106	2,245	2,944	5,384	6,361	7,604	9,191
Percent of Philippines	8.79%	10.70%	14.03%	16.30%	19.80%	19.89%	19.89%	19.69%

Assumptions of Medium Level Projection

Mortality (expectation of life at birth)

	1960-65	1965-70	1970-75
High	55.0	60.4	65.8
Medium	52.5	55.0	57.6
Low	52.5	55.0	57.6

Fertility (sex-age adjusted birthrate)

High	53.91	53.91	53.91
Medium	53.91	53.91	53.91
Low	53.91	52.56	51.25

Sex ratio at birth: 105 males per 100 females
Migration: nil

Source: Bureau of the Census and Statistics, Population Projection of the Philippines, p. 27.

Table XXXI

NUMBER OF MANUFACTURING ESTABLISHMENTS AND EMPLOYEES, BY INDUSTRY GROUP AND SIZE OF EMPLOYMENT, MINDANAO REGION

1963 Census Survey

	Size of Employment														Total All Manufacturing
Industry Group	5-9	10-19	20-29	30-39	40-49	50-59	60-79	80-89	100-199	200-299	300-499	500-999	1,000-2,499	2,500-Over	
1. Manufacturing															
Establishments	231	35	20	13	1	4	3	2	3	2	--	3	--	--	317
Employment	1,617	525	500	455	45	220	210	180	450	500	--	2,250	--	--	6,952
2. Food and beverages															
Establishments	255	56	12	2	1	3	3	1	4	1	1	--	--	1	340
Employment	1,785	840	300	70	45	165	210	90	600	250	400	--	--	2,500	7,255
3. Textiles, wearing apparel and made-up goods															
Establishments	268	3	2	--	--	--	--	--	--	--	--	--	--	--	273
Employment	1,876	45	50	--	--	--	--	--	--	--	--	--	--	--	1,971
4. Wood products (except furniture)															
Establishments	28	16	16	9	9	7	6	4	7	8	6	3	1	--	120
Employment	196	240	400	315	405	385	420	360	1,050	2,000	2,400	2,250	1,750	--	12,171
5. Metal products, machinery, and transportation equipment															
Establishments	44	5	6	2	--	1	--	--	--	--	1	--	--	--	59
Employment	308	75	150	70	--	55	--	--	--	--	400	--	--	--	1,058
6. All other manufacturing															
Establishments	14	--	1	1	--	1	--	--	1	1	--	--	--	--	19
Employment	98	--	25	35	--	55	--	--	150	250	--	--	--	--	613
Mindanao[a]															
Establishments	930	129	64	31	13	16	13	9	15	12	8	6	1	1	1,248
Employment	6,475	1,935	1,600	1,085	585	880	910	810	2,250	3,000	3,200	4,500	1,750	2,500	31,480

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[a] The total number of establishments and employment in Mindanao includes other establishments than those listed above.

Source: Bureau of the Census and Statistics.

Table XXXII

NUMBER OF MANUFACTURING ESTABLISHMENTS AND EMPLOYEES, BY INDUSTRY GROUP AND SIZE OF EMPLOYMENT, DAVAO PROVINCE

1963 Census Survey

Size of Employment	Manu-facturing #2 and #3	Food and Beverages	Textiles, Wearing Apparel, etc.	Wood Products Except Furniture	Metal Products, Machinery, Transportation Equipment	All Other Manu-facturing	Total All Manu-facturing
5-9							
Establishments	59	51	86	3	16	5	220
Employees	413	357	602	21	112	35	1,540
10-19							
Establishments	7	11	--	3	3	--	24
Employees	105	165	--	45	45	--	360
20-29							
Establishments	6	3	2	1	4	--	16
Employees	150	75	50	25	100	--	400
30-39							
Establishments	3	1	--	2	2	--	8
Employees	105	35	--	70	70	--	280
40-49							
Establishments	--	--	--	1	--	--	1
Employees	--	--	--	45	--	--	45
50-59							
Establishments	--	--	--	1	--	1	2
Employees	--	--	--	55	--	55	110
60-79							
Establishments	--	1	--	1	--	--	2
Employees	--	70	--	70	--	--	140
80-99							
Establishments	--	1	--	2	--	--	3
Employees	--	90	--	180	--	--	270
100-199							
Establishments	1	2	--	2	--	--	5
Employees	150	300	--	300	--	--	750
200-299							
Establishments	1	--	--	1	--	--	2
Employees	250	--	--	250	--	--	500
300-499							
Establishments	--	--	--	3	--	--	3
Employees	--	--	--	1,200	--	--	1,200
500-999							
Establishments	1	--	--	1	--	--	2
Employees	750	--	--	750	--	--	1,500
Davao Province							
Establishments	78	70	88	21	25	6	288
Employees	1,923	1,092	652	3,011	327	90	7,095

Source: Bureau of the Census and Statistics.

Table XXXIII

NUMBER OF MANUFACTURING ESTABLISHMENTS AND EMPLOYEES, BY INDUSTRY GROUP AND SIZE OF EMPLOYMENT, DAVAO CITY

1963 Census Survey

Size of Employment	Manufacturing #2 and #3	Food and Beverages	Textiles, Wearing Apparel, etc.	Wood Products Except Furniture	Metal Products, Machinery, Transportation Equipment	All Other Manufacturing	Total All Manufacturing
5-9							
Establishments	41	32	55	3	13	14	158
Employees	287	224	385	21	91	98	1,106
10-19							
Establishments	3	9	--	1	3	--	16
Employees	45	135	--	15	45	--	240
20-29							
Establishments	6	3	2	1	4	--	16
Employees	150	75	50	25	100	--	400
30-39							
Establishments	3	--	--	2	2	--	7
Employees	105	--	--	70	70	--	245
40-49							
Establishments	--	--	--	1	--	--	1
Employees	--	--	--	45	--	--	45
50-59							
Establishments	--	--	--	--	--	1	1
Employees	--	--	--	--	--	55	55
60-69							
Establishments	--	--	--	--	--	--	0
Employees	--	--	--	--	--	--	0
70-99							
Establishments	--	1	--	2	--	--	3
Employees	--	90	--	180	--	--	270
100-199							
Establishments	1	2	--	--	--	--	3
Employees	150	300	--	--	--	--	450
200-299							
Establishments	1	--	--	1	--	--	2
Employees	250	--	--	250	--	--	500
300-499							
Establishments	--	--	--	3	--	--	3
Employees	--	--	--	1,200	--	--	1,200
500-599							
Establishments	--	--	--	1	--	--	1
Employees	--	--	--	750	--	--	750
Davao City total							
Establishments	55	47	57	15	22	15	211
Employees	987	824	435	2,556	306	153	5,261

Source: Bureau of the Census and Statistics.

Table XXXIV

SIZE DISTRIBUTION OF MANUFACTURING ESTABLISHMENTS AND EMPLOYMENT BY NUMBER OF EMPLOYEES, DAVAO PROVINCE AND DAVAO CITY
Census Survey of 1963, and Projection of Establishments Outside Davao City
1965-1980

	Size of Employment								
	5-9	10-19	20-49	50-99	100-199	200-299	300-499	500-999	Total
Establishments									
Davao Province	220	24	25	7	5	2	3	2	288
Davao City	158	16	24	4	3	2	3	1	211
Outside city	62	8	1	3	2	0	0	1	77
Employment									
Davao Province	1,540	360	725	520	750	500	1,200	1,500	7,095
Davao City	1,106	240	690	325	450	500	1,200	750	5,261
Outside city	434	120	35	195	300	0	0	750	1,834

Projection of Establishments and Employment in Davao Province Outside Davao City, 1965-80

Establishments

Year	Percent of 1963	5-9	10-19	20-49	50-99	100-199	200-299	300-499	500-999	Total
1965	1.1088%	69	9	1	3	2	0	0	1	85
1980	2.4059%	149	19	3	7	5	0	0	2	185
Increase		80	10	2	4	3	0	0	1	100

Employment

Year	Percent of 1963	5-9	10-19	20-49	50-99	100-199	200-299	300-499	500-999	Total
1965	1.3200%	573	162	46	257	396	0	0	990	2,424
1980	2.8344%	1,230	349	99	553	850	0	0	2,126	5,207
Increase		657	187	53	296	454	0	0	1,136	2,783

Source: Based upon information provided by the Bureau of the Census and Statistics.

Appendix B

SAMPLE DEVELOPMENT STANDARDS AND RESTRICTIONS

SAMPLE DEVELOPMENT STANDARDS AND RESTRICTIONS

A. Objectives of minimum standards

The minimum standards set forth herein are designed to:

1. Promote the orderly development of the Project into an efficient industrial subdivision conducive to stable investment.

2. Minimize emissions of smoke, sound, vibration, odor, from individual industries which would be detrimental to the Project or other industries located within it.

3. Provide standards for parcel design to minimize conflict between the operations of individual industries within the Project.

4. Make the area an attractive and desirable place in which to work.

B. Performance standards

No industrial establishment may be located, constructed, operated, or maintained within the Project unless the same shall conform to each of the following standards:

1. No emission of smoke shall be permitted which is injurious to human health, or to animals, vegetation or other forms of property, or which can cause soiling of any object at or beyond the boundaries of the Project.

2. The level of continuing or recurring objectionable noise produced by operations other than construction conducted on any parcel shall be controlled so that it shall not exceed at the boundaries of the Project, the noise level of vehicular traffic which may occur on major streets within the Project; provided, however, that this level may be exceeded by occasional intermittent peaks.

3. The level of continuing or recurring vibration produced by operations conducted on any parcel shall be controlled by insulation, suspension, or other means so that at the boundaries

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of the parcel there shall be no evidence of continuing ground vibration detectable without the use of instruments.

4. Odor resulting from operations conducted on any parcel shall be controlled so that it is not offensive beyond the boundaries of the Project.

5. All activities involving, and all storage of, flammable and explosive materials shall be provided with adequate safety devices against the hazards of fire and explosion and adequate fire-fighting and fire suppression equipment and devices standard in industry shall be provided and maintained.

C. Industrial development

1. Land use shall be as (previously) set forth.

2. There shall be a maximum density requirement of 60 percent.

3. Maximum coverage shall be 60 percent of the total parcel area.

4. Buildings

    a. The number and size of buildings shall be governed by the requirements contained in items numbered (5) through (9), inclusive, below.

    b. The height of any building shall not be regulated by this plan.

    c. All buildings constructed in the Project shall be of types suitable for industrial use in accordance with the requirements set forth in this section.

5. Setbacks

    Buildings shall:

    a. Be set back not less than 10 feet in front yards.

    b. Be set back not less than 10 feet in side yards on a street.

    c. Either have no set back or a setback of not less than 10 feet on side yards not on a street.

   d. Either have no setback or a setback of not less than 10 feet in rear yards.

   e. Have no wall openings in that portion built along property lines.

6. Minimum parcel area shall be not less than 20,000 square feet, and no parcel shall have at the front property line a width of less than 100 feet; provided, however, that where such front property line occurs on the arc of a curving street, such front property line may, at the discretion of the Agency, be less than 100 feet; and provided further, however, that in no event shall the average width of any such parcel be less than 100 feet.

7. Off-street parking

   Each parcel shall be provided with an off-street parking area of sufficient size to allow for automobile parking for all employees, and visitors, and all company operated vehicles, provided, however, that no parcel shall have less than 5 usable and accessible parking spaces; and provided further than the initial number of employees parking spaces and visitor parking spaces shall be determined by the Agency at the time of review of the developer's plan according to the requirements.

   In addition, each such off-street parking space shall:

   a. Be located not closer than 5 feet to any street property line.

   b. Have a usable area of not less than 180 square feet.

   c. Be surfaced with a suitable hard surfaced material.

   d. Have appropriate bumper guards where needed.

   e. Be connected with an adequate access drive so that there shall be no necessity for cars backing onto a street. Such access drive shall be surfaced with a suitable hard surfaced material.

8. Off-street loading

   All loading operations shall be performed on the parcel. There shall be not less than one off-street loading space for each building having a floor area of 20,000 square feet. Additional loading space may be required for buildings having in excess of 20,000 square feet of floor area. The size of the one required loading space and the number and size of additional loading spaces shall be determined by the Agency at time of review of the developer's plans....; provided, however, that each loading space shall be:

a. Not less than 10 feet in width, 55 feet in length, and 14 feet in height, exclusive of access platform and maneuvering areas.

b. Surfaced with a suitable hard surfaced material and equipped with appropriate guards where needed.

c. So located that they are neither within the required front or street side yard nor cause trucks to encroach on the required front or street side yard more than 5 feet during the process of loading or unloading.

9. With the exception of access drives and sidewalks and the area permitted to be used for off-street parking, front and street side yards shall be maintained in a landscaped, decoratively treated condition, largely or wholly covered with living plant materials. In no case shall more than 75 percent of the required front or street side yard area be used for a purpose other than landscaping as described herein. The landscaped front or street yard shall be free of all structures except decorative structures or fencing and shall not be used for storage of any kind, or displays, except for signs designed as set forth in item (10) of this subparagraph.

10. Signs shall be permitted only to identify the occupant and type of product or service. Signs shall be planned as part of total design of the parcel and the buildings to be constructed thereon. The erection of billboards is prohibited.

11. Areas of a parcel outside of buildings used for unsightly storage of supplies, semi-finished or finished products or materials or any other articles, including waste materials or refuse, shall be enclosed by an opaque fence or wall of permanent construction. Each such fence or wall shall be a minimum of 6 feet in height. In no case shall supplies, semi-finished or finished products, or materials or any other articles including waste materials or

refuse, be stored within the required front or street sideyard setback.

Source: Redevelopment Agency of the City of Richmond, California

Appendix C

QUESTIONNAIRE, INDUSTRIAL SURVEY OF DAVAO CITY

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Questionnaire

INDUSTRIAL SURVEY OF DAVAO CITY

Name of Firm: ____________________ Date of Interview: ____________________

Address: ____________________ Interview by: ____________________

Telephone: ____________________ Type of Firm: Single Prop. ______

Name of Official: ____________________ Partnership ______

Title: ____________________ Corporation ______

Location of headquarters of firm: ____________________

Is this a branch plant: YES ______________. NO ______________.

I. Major Products Manufactured	Market (Percentage of Units)			
	Mindanao (Province)	Other PI (Province)	Foreign (Country)	Volume in Units
1.				
2.				
3.				
4.				
5.				

II. Major Raw Materials Used in Manufacturing	Sources (Percentage of Total)			
	Mindanao (Province)	Other PI (Province)	Foreign (Country)	Volume in Units
1.				
2.				
3.				
4.				
5.				
6.				

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III. Other Products Distributed / General Market Area

	Other Products Distributed	General Market Area
1.	____________________	__________________________
2.	____________________	__________________________
3.	____________________	__________________________
4.	____________________	__________________________

IV. Present Employment:

1. Total No. of employees ___ 3. No. in office & management ___.

2. No. of shifts per day ___ 4. No. of production workers ___.

V. Transportation:

1. How many trucks load or unload at your plant each day? (average) _____.

2. What size trucks (length or weight)? ____________________.

3. How do your plant workers usually come to work?

   a) Bus or jeepney ______________________.

   b) Bicycle ____________________________.

   c) On foot ____________________________.

   d) Automobile (No. of cars) ______________.

4. How do you and your managers usually come to work?

   a) Bus or jeepney ______________________.

   b) Bicycle ____________________________.

   c) On foot ____________________________.

   d) Automobile (No. of cars) ______________.

VI. Plant Facilities:

1. At what percent of capacity is this plant operating? (approx.) _____.

   a) If not at full capacity, why not ____________________
   ____.

2. In what year was this building constructed? ______________.

3. What is the major building material? ________________.

4. Is this building owned? __________ rented? ____________.

    a) what is the total floor area of the bldg? ________ sq. m.

    b) OR, estimate dimensions of the bldg. ______________

    ____

5. Is this land owned? ______________ or rented? __________.

    a) what is the total land area? ________________ sq. m.

    b) OR, estimate dimensions of land area ______________.

6. If land and/or building is rented:

    a) what is the total monthly rent? ₱ __________.

    b) what is the total length of rental period? ______ years months

    c) what is the length of remaining rental period? ___ years months

7. If the land and/or building is owned:

    a) was the building originally constructed with a loan?
    Yes ______ No ______.

    b) is any portion of the loan still outstanding? Yes__ No__.

    c) what was the original length of the loan period?___ years.

    d) what was the percent of original down payment? ________.

    e) what is the present market value of owned land and
    bldgs? ₱ ________.

    f) what is the general market value of land in this
    area? ₱ ______ per sq. m.

8. Why was this firm originally located on this site? ________

    ____.

    a) Is this location still desirable? Yes ______ No ______.

    b) If not, why? ________________________________

    ____

VII. Expansion Plans

1. Do you have any plans for expanding your plant facilities
    within the next two years? Yes ______ No ______.

2. What products will be manufactured in new facilities? ______

______________________________.

3. Would you locate the facilities at this site? __________

Or, elsewhere? (specify where) ____________________

______________________________.

4. New land and building space needs or plans:

a) land ________ sq. m.

b) bldg. ________ sq. m.

5. Expected employment increase (total) ________.

a) production workers __________.

b) office and managers _________.

VIII. If an industrial estate is built in Mindanao how would this affect your plans for the location of your manufacturing activities:

1. if moving the present or expanded plant ______________

____

______________________________.

2. if establishing a branch plant ____________________

____

______________________________.

3. IF you DO NOT wish to locate on an industrial estate:

a) why would you not? ____________________

______________________________.

b) what government policy or assistance might cause you to reconsider? ____________________

______________________________.

4. IF you DO wish to locate on an industrial estate:

a) Where in Davao do you think the estate should be located?

______________________________.

b) Would you wish to rent or buy land? ______________.

c) Would you wish to rent, buy, or construct your own building? ____________________.

d) Minimum land area needed: ____________ sq. m.

e) Minimum bldg. area needed: ___________ sq. m.

f) Electric power: Present use _________ kwh/day.

Future need _________ kwh/day.

g) Water supply: Present use _________ cu. m./day.

Future need _________ cu. m./day.

h) If you wish to rent, how much more would you be willing to pay per month for land and a modern factory building in a protected industrial estate? ₱__________ per sq. m.

or ₱__________ total

i) If you wish to buy, how would you expect to finance?

____.

Appendix D

QUESTIONNAIRE, INDUSTRIAL SURVEY OF METROPOLITAN MANILA

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Questionnaire

INDUSTRIAL SURVEY OF METROPOLITAN MANILA

Name of Firm: ____________________ Date of Interview: ____________________

Address: ____________________ Interview by: ____________________

Telephone: ____________________ Type of Firm:

Name of Official: ____________________ a. Manufacture ☐

Title: ____________________ c. Distributor ☐ b. Assembly ☐

I. Major Products Manufactured

	Market (Percentage of Units)			
	Mindanao (Province)	Other PI (Province)	Foreign (Country)	Volume in Units
1. ______				
2. ______				
3. ______				
4. ______				
5. ______				
6. ______				
7. ______				

II. Products Assembled

	Sources (Percentage of Total)			
	Mindanao (Province)	Other PI (Province)	Foreign (Country)	Volume in Units
1. ______				
2. ______				
3. ______				
4. ______				
5. ______				

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CONFIDENTIAL

III.	Major Raw Materials Used in Manufacturing	Sources (Percentage of Total)			
		Mindanao (Province)	Other PI (Province)	Foreign (Country)	Volume in Units
1.					
2.					
3.					
4.					
5.					
6.					

IV.	Other Products Distributed	Market Area
1.		
2.		
3.		
4.		

V. Total Present Employment: ________________.

VI. Location of Other Plants:

		Major Products	Employment	Factory or Warehouse
1.	Luzon			
2.	Mindanao (Province)			
	a)			
	b)			
	c)			
3.	Other PI			

VII. Mindanao Dealers or Distributors

	Name	Location	Products	Market Area
1.				
2.				
3.				
4.				

VIII. Expansion Plans for Next Two Years:

	Province	Products	Factory or Warehouse	New Employment
1. Luzon				
2. Mindanao				
a) ____				
b) ____				
c) ____				
3. Other PI				
____				

IX. If no stated plans for Mindanao, will you consider the location of a branch plant there at some future time? ____________.

1. If yes, approximately when? ____________.

2. If no, why not? ____________

____

a) What government policy or assistance might cause you to reconsider? ____________

____________.

X. If you have definite plans for Mindanao or if you might establish a branch there in the future, would you wish to locate in an industrial estate?

Yes ____________. No ____________.

1. If no, why not? ____________

____

2. If yes:

a) In which city or town? ______________________________.

b) Would you wish to own the land? _______ Rent the land?__.

c) Would you wish to own the bldg.? _____ Rent the bldg?__.

d) How much land would you need? ________sq. m. or hectares.

e) How much bldg. space would you need? _____________ sq. m.

f) What other factors would be most important in selecting a location in Mindanao?

Large power supply __________

Low power cost ______________

Scheduled shipping __________

Port facilities _____________

Airline service _____________

Trucking services ___________

Hospitals _______________.

Hotels __________________.

Banks ___________________.

Repair services _________.

Skilled labor ___________.

Tax exemptions __________.

Other ____

____

____

XI. Remarks: ____

____

____

____

____

____

____

____

____

____

____

____

Appendix E

PRIVATE BUILDING CONSTRUCTION ACTIVITIES, BY NUMBER OF PERMITS AND VALUE, DAVAO CITY, ILIGAN, AND CAGAYAN DE ORO, 1960-63

Table XXXV

PRIVATE BUILDING CONSTRUCTION ACTIVITY, BY NUMBER OF PERMITS AND VALUE DAVAO CITY, ILIGAN CITY, AND CAGAYAN DE ORO CITY 1960-1963

Davao City

Year	Residential		Institutional		Industrial and Public Utility		Total[a]	
	Number of Permits	Value (pesos)	Number of Permits	Value (pesos)	Number of Permits	Value (pesos)	Number of Permits	Value (pesos)
1960	474	₱2,928,226	15	₱ 572,000	34	₱1,465,200	548	₱9,186,306
1961	498	2,683,950	11	404,000	22	771,400	571	5,134,400
1962	608	2,684,243	23	1,088,900	23	412,800	720	6,120,993
1963	375	4,850,020	18	1,464,500	47	1,627,840	493	8,369,732

Iligan City

Year	Residential		Commercial		Industrial		Total	
	Number of Permits	Value (pesos)	Number of Permits	Value (pesos)	Number of Permits	Value (pesos)	Number of Permits	Value (pesos)
1960	n.a.	₱ n.a.	n.a.	₱ n.a.	n.a.	₱ n.a.	n.a.	₱ n.a.
1961	88	411,950	12	154,112	15	3,935,000[b]	115	4,501,062
1962	78	595,000	12	82,300	5	698,000	95	1,375,300
1983	288	646,950	40	557,500	3	60,000	331	1,264,450

Cagayan de Oro City

Year	Residential		Commercial		Industrial and Public Utility		Total	
	Number of Permits	Value (pesos)	Number of Permits	Value (pesos)	Number of Permits	Value (pesos)	Number of Permits	Value (pesos)
1960	90	₱ 319,686	21	₱ 210,300	9	₱ 96,550	120	₱ 626,536
1961	123	634,272	21	115,205	10	216,854	154	966,331
1962	137	676,830	26	685,300	8	238,780	171	1,600,910
1963	123	697,000	34	698,820	13	2,244,910	170	3,640,730

Note: As the information is obtained from different sources, direct comparisons are unavailable.

a. Includes nonresidential and other which are not shown separately.
b. Mindanoa Portland Cement Co. over ₱3,000,000.

Sources: City Engineer, Davao City; City Engineer, Iligan City; City Engineer, Cagayan de Oro City.

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Appendix F

INDUSTRIAL RELEASE FORM

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AMERICAN INDUSTRIAL REAL ESTATE ASSOCIATION

STANDARD INDUSTRIAL LEASE

This Lease is made and entered into at .... Calif., on .... , 196..........

by and between ....

.... as Lessor, and ....

....

as Lessee, on the following terms and conditions:

1. **PREMISES LEASED.** Lessor, for and in consideration of the rents, conditions, terms and covenants herein specified to be paid, performed and observed by Lessee, hereby leases to Lessee and Lessee hereby leases from Lessor the premises and appurtenances thereto situated in the County of ...., State of California, described as:

2. **TERM.** This Lease shall commence at 6 o'clock P.M. on the day prior to ....

and it shall end at 6 o'clock P.M. on .... ,

3. **RENT.** Lessee hereby agrees to pay Lessor ....

.... ($ ....) lawful money of the United States as rent for said premises

payable, in advance in equal monthly installments of $.................................... on the .... day of

each month of the term hereof payable at such places as Lessor may designate in writing. Lessor hereby acknowledges receipt

of the sum of $.................... in payment of rent for the month of .... , Lessor further

acknowledges receipt of $ .... (advance rent, security, or consideration for the execution of this Lease

Strike out two inappropriate terms.)

4. **USE OF PREMISES.** Lessee shall not use or permit said premises or any part thereof to be used for any purpose

other than ....

....

5. NOT TO INCREASE INSURANCE. Within the use, set forth in Paragraph 4, Lessee shall not use or permit said premises or any part thereof to be used, nor acts to be done, which will increase the existing rate of insurance upon the building in which said premises are located, or upon Lessor's adjacent property or cause a cancellation of any insurance policy covering said building or property or any part thereof, nor shall Lessee keep in or about said premises any article which may be prohibited by any standard form of fire insurance. Lessee shall at Lessee's expense, comply with all insurance company requirements pertaining to the use of said premises so that said premises shall at all times be insurable for fire, extended coverage and the risks specified in Paragraph 13.

6 WASTE. Lessee shall not commit or suffer to be committed any waste or nuisance in or upon said premises (nor shall Lessee by act or omission disturb the quiet enjoyment of any other tenant in the building in which said premises are located).

7. ORDINANCES. Lessee, at Lessee's expense, shall comply with all covenants, conditions and restrictions of record and all statutes, ordinances, rules and regulations of any lawful authority whether existing or to be enacted, relating to the use of said premises.

8. ALTERATIONS, ETC. Lessee shall not make, nor permit to be made any alterations, additions, utility installations, (including power panels), in or about said premises without the prior written consent of Lessor. Any additions, alterations or utility installations, including power panels, made by Lessee in or about said premises, except movable furniture and trade fixtures, shall become a part of the realty and belong to the Lessor unless otherwise agreed to in writing by the parties. Any such approved alterations, additions, or utilities installations shall be made at Lessee's expense.

9. TRADE FIXTURES. All trade fixtures together with movable furniture may, at the end of this Lease, be moved from said premises at Lessee's expense provided that Lessee shall pay Lessor for any damage caused by removal and provided that Lessee shall pay such damage forthwith upon demand by the Lessor. As to removal of trade fixtures, Lessor may require Lessee, at Lessee's expense, to restore said premises to their conditions as of the date of the execution of this Lease, reasonable wear and tear excepted. The property listed on Schedule 1 (which may be attached hereto and made a part hereof) includes Lessee's trade fixtures which are or may be installed in said premises.

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10. LIENS. Lessee shall keep said premises free of mechanic's, material-men's, judgment and all tax liens arising out of work done for or debts or taxes incurred by Lessee. If Lessor discharges any such lien, Lessee agrees to save Lessor harmless therefrom and to pay Lessor the cost of discharging such lien with interest at seven (7%) percent per annum from the date Lessor discharges such lien together with Lessor's costs and reasonable attorney's fees in connection with the settlement, trial or appeal of any such lien matter, payable with the next installment of rent due.

11. OBLIGATION TO REPAIR. Lessee, at Lessee's expense, shall repair and maintain said premises and every part thereof except those portions which Lessor agrees to maintain, in this paragraph and Paragraphs 12 and 27, together with the appurtenances thereto including but not limited to all glass, glazing, skylights, sidewalks, driveways, parking lots, fences and signs in good, safe and sanitary condition. Lessee hereby waives all right to make repairs at the expense of Lessor provided in Section 1941 and 1942 of the California Civil Code and Lessee waives any rights which Lessee may have under said sections. Lessor shall, at Lessor's expense, repair and maintain only the exterior walls, exterior roof and cement-embedded or sub-surface non-accessible plumbing of said premises. Lessor shall not be liable to Lessee or any other party whatsoever for any damage or injury caused by Lessor's failure to keep or maintain said exterior walls, exterior roof and cement-embedded or sub-surface non-accessible plumbing unless Lessee shall forthwith give Lessor or Lessor's agent designated herein written notice of the need to repair said portions of said premises, and then, only if Lessor fails to make said repairs within a reasonable time after receiving said written notice. If Lessee fails to make repairs required of Lessee under the terms hereof, Lessor may, but shall be under no obligation so to do, enter upon said premises and make said repairs and charge the costs thereof to Lessee as part of the next installment of rent with interest from the date of Lessor's payments at seven (7%) percent per annum and Lessee agrees to pay the cost thereof with Lessee's next rental payment.

12. ACCEPTANCE OF PREMISES. By entry hereunder, Lessee acknowledges that said premises and appurtenances are in good, safe and sanitary condition and Lessee agrees on the last day of the term hereof, or upon sooner termination of this Lease, to surrender said premises and said appurtenances to Lessor in the same condition as received by Lessee, ordinary wear and tear, fire, Acts of God and extended coverage risks, and any damage for which an insurance company has paid Lessor or any obligation of Lessor in Paragraph 11 excepted.

13. LESSEE'S OBLIGATION FOR INSURANCE. Lessee agrees to maintain at Lessee's expense during the term hereof the following insurance with respect to the leased premises and the use thereof, namely: (Delete sub-paragraphs that do not apply)

a) Public liability insurance with limits of $.. for injuries or death to one person and $.. for injuries or death arising out of one accident.

b) Property damage insurance in the principal amount of $..

c) If said premises contain plate glass, plate glass insurance in such amount as shall adequately cover the plate glass installed therein.

d) Fire insurance in the principal amount of $..

e) Extended coverage insurance in the principal amount of $..

f) Adequate workmen's compensation insurance covering Lessee's employees.

g) If said premises contain or shall contain any boilers, boiler insurance in the amount of $..

h) ....

....

If Lessee fails to procure or maintain the insurance required of Lessee, Lessor may obtain such insurance at Lessor's option and charge Lessee the costs thereof which will be due with the next installment of rent.

With respect to every policy of insurance referred to above, it shall be placed with a company acceptable to Lessor and shall provide that Lessor is a named insured and no policy referred to above may be cancelled without ten days prior written notice to Lessor and Lessee. Lessee shall furnish Lessor with written evidence satisfactory to Lessor of the insurance referred to above as soon as Lessee obtains insurance. Fifteen days prior to the expiration of any policy of insurance covering said premises or the use thereof, Lessee shall deliver to Lessor a renewal certificate of such insurance.

14. WAIVER OF SUBROGATION. Any party obtaining insurance pertaining to said premises or the use thereof shall deliver to the other party as soon as said insurance is obtained written waiver of all insurance carriers' right to subrogate against the party that has not obtained said insurance arising out of payments which may be made by any insurer covering any risk to said premises or the use thereof. Lessee's failure to obtain any workmen's compensation insurance subrogation waiver only shall not be a violation of this Lease.

15. HOLD HARMLESS. Lessee agrees to indemnify and save Lessor harmless of and from any and all cost, expense, claims, demands, obligations, and liabilities, cause or causes of action by reason of or in connection with the condition of, state of repair, use or appurtenances thereto including all adjacent sidewalks, alleys and parking lots, if any, and Lessee's agreement to hold Lessor harmless under the provisions of this paragraph shall include Lessee's obligation to pay Lessor's reasonable attorney's fees and costs incurred in the connection with the settlement trial or appeal of any such matter wherein the Lessor must defend against any such claim, demand or cause of action.

16. COVENANT NOT TO SUE. Except as provided in Paragraph 11, Lessee in Lessee's behalf and in behalf of his agents, employees, servants, business guests, invitees and all others claiming the right to be in said premises or the building in which said premises are located hereby covenants not to sue Lessor and hereby waives all claims against Lessor: (a) for damage to all personal property and trade fixtures in or about said premises or the building in which said premises are located whether arising from water leakage or otherwise and (b) for injuries to any persons claiming a right to be in said premises or the building in which said premises are located arising out of any cause at any time whether known or unknown to Lessor, including but not limited to the use, misuse, condition or state of repair of said premises or any part thereof or any part of the building in which said premises are located and (c) for loss of Lessee's profits at any time from any cause. This covenant and waiver is complete and includes a waiver of claims arising out of damage by the use, misuse, conditions or state of said premises or any part thereof or the building in which said premises are situated though the cause of such damage may be so situated that Lessee has no access to or means of repairing the same except in Paragraph 11 provided.

17. ENTRY ON ROOF. If Lessee causes any person to go upon the roof of said premises or the building in which said premises are located, Lessee shall require any such person to seal and water proof all holes made by him in said roof.

18. UTLITIES. Leesee shall pay for all water, gas, heat, light, power, telephone and other utilities and services supplied to said premises. If separate gas, water and power meters are not available for said premises, Lessee agrees to a reasonable proration of said utility charges.

19. TAXES. If real property taxes assessed against said premises are increased over the taxes for the Fiscal Year July 1, 19.......... to June 30, 19.......... , Lessee agrees to pay Lessor the amounts of each increases during the term of this Lease, payable within 20 days from date Lessor notifies Lessee of such increases. If no separate tax bill is rendered for the premises occupied by Lessee, Lessee agrees to a reasonable proration of said tax increase.

20. LESSOR'S RIGHT OF ENTRY. Lessee agrees that Lessor and Lessor's agents may enter into and upon premises at reasonable times for the purpose of inspecting the same and to show said premises to prospective purchasers or for the purpose of maintaining the building in which said premises are situated or the purpose of making repairs, alterations or additions or utility installations to any other part of said building including the erection and maintenance of such scaffolding, ladders, fences and props as may be required or for the purpose of posting notices of non-liability for alterations, additions, repairs or utility installations or for the purpose of placing upon the property in which said premises are located any ordinary "For Sale" signs without any rebate of rent or liability to Lessee for damage or interference with the quiet enjoyment of said premises; Lessee shall permit Lessor within sixty days prior to the expiration of this Lease to place upon premises ordinary "For Lease" signs, and to show said premises to prospective Lessees during reasonable business hours.

21. **CONDEMNATION.** If said premises or any part thereof are taken under the power of eminent domain, this Lease shall terminate as to the part so taken as of the date the condemning authority takes possession thereof. In such event the rent shall be reduced in the proportion that the floor area taken bears to the total floor area prior to the taking. If more than 10 per cent of the floor area of said premises or more than 25 per cent of the area leased hereunder but not occupied by any building is taken by condemnation, only then, may Lessee, at Lessee's option, terminate this Lease as of the date of condemning authority takes possession of said condemned portion by giving written notice of termination to Lessor within ten days after the condemning authority takes such possession. If Lessee does not terminate this Lease as hereinabove immediately provided, then the rent payable shall be reduced as set forth above. Any compensation awarded as damages for the taking of said premises or the appurtenances thereto together with any severance damages shall be the sole property of Lessor, except to the extent that any award is made for trade fixtures or equipment of Lessee which are not part of said real property and except to the extent that Lessee may be paid for moving costs.

22. **ASSIGNMENTS AND SUB-LEASES.** Lessee shall not assign this Lease, or any interest therein, and shall not sublet said premises or any part thereof, or any right or privilege appurtenant thereto, or suffer any other person (the agents and servants of Lessee excepted) to occupy or use said premises, or any portion thereof, without the prior written consent of Lessor first had and obtained, and a consent to one assignment, sub-letting, or use by any other person shall not be deemed to be a consent to any subsequent assignment, sub-letting, or use by another person, or to release Lessee from any liability hereunder. Any such assignment or sub-letting without such consent shall be void, and shall not alter the primary liability of Lessee under this Lease. This Lease shall not, nor shall any interest therein, be assignable as to Lessee's interest by operation of law, assignment for the benefit of creditors, voluntary or involuntary bankruptcy or reorganization, or otherwise, without the prior written consent of Lessor. Provided, however, that Lessor shall not unreasonably withhold his consent to a Sub-Lease, if Lessee and said Sub-Lessee remain liable under this Lease.

23. **SUBORDINATION OF LEASE, ETC.** Lessee agrees that Lessor may hypothecate, pledge, or transfer this Lease for any lawful purpose. This Lease is subject to any mortgages, trust deeds or other liens which are or may be against said premises or the building in which said premises are located. Lessee agrees that Lessee shall, upon request, execute such documents as may be necessary to make the rights given Lessee hereunder subordinate to any such mortgages, deeds of trust, or other liens now against said premises or the building in which said premises are located. If Lessor fails to pay any part or all taxes against said real property or installments on any mortgage or trust deed against said real property or if Lessor fails to pay any other lien against said real property which will interfere with Lessee's right to possession, Lessee may pay the same and deduct the amount paid from the next rent due. In order that Lessor may obtain a loan against said premises, or the building in which they are situated, at all times during the term of this Lease, Lessee agrees to furnish Lessor with Lessee's financial statements required for loan applications.

24. **LESSEE'S BANKRUPTCY, ETC.** If Lessee suffers the appointment of a receiver to take possession of substantially all of Lessee's assets and such receiver is not removed within thirty days from the date of his appointment or if Lessee makes a general assignment for the benefit of creditors, or if Lessee files a petition in bankruptcy or reorganization, or if there is filed against Lessee an involuntary petition in bankruptcy or for reorganization, then in any such event Lessor may at Lessor's option terminate and cancel this Lease together with any right or rights whatsoever which Lessee may have hereunder.

25. **LESSEE'S BREACH.** If Lessee fails to pay rent when the same becomes due, time being expressly declared to be of the essence of this Lease, or if Lessee fails to perform any other covenant, condition or obligation required of Lessee, or if Lessee abandons said premises, (abandonment being defined herein as Lessee's failure to have any employee in said premises, or Lessee's failure to use said premises for five consecutive days provided in either event Lessee is at the same time in default in the payment of rent) Lessor in addition to any other legal remedies he may have, shall have the option to do any one or all of the following to the extent that they are not inconsistent:

(a) Immediately re-enter and remove all persons and property from said premises, storing said property in a public warehouse or elsewhere at Lessee's expense without liability on the part of Lessor;

(b) Collect by suit or otherwise each installment of rent or other sum as it becomes due or enforce by suit or otherwise any covenant or condition or term of this Lease required to be performed by Lessee;

(c) Terminate this Lease in which event Lessee agrees to immediately surrender possession of said premises and to pay Lessor all damages Lessor may incur by reason of Lessee's default including the cost of recovering possession of said premises and including the worth at the time of such termination of the excess, if any, of the amount of rent and charges equivalent to the rent reserved in this Lease for the remainder of the stated term over the then reasonable rental value of said premises for the remainder of said term.

(d) Should Lessor elect to re-enter as herein provided, or should he take possession pursuant to legal proceedings or pursuant to any notice provided for by law, he may either terminate this Lease or he may from time to time, without terminating this Lease, re-let said premises, or any part thereof for the account of Lessee either in Lessor's name or otherwise, upon such terms and conditions and for such period (whether longer than the balance of the term hereof or not) as Lessor may deem advisable, either with or without any equipment or fixtures that may be situated thereon or therein, in which event the rents received on any such re-letting during the balance of the term of this Lease or any part thereof shall be applied first to the expenses of reletting and collecting, including necessary renovation and alteration of the premises and a reasonable attorney's fee and any real estate commission actually paid, and, thereafter, toward payment of all sums due or to become due to Lessor hereunder, and if a sufficient sum shall not be thus realized to pay such rent and other charges, Lessee shall pay to Lessor monthly any deficiency and Lessor may sue therefor as each monthly deficiency shall rise; such monthly deficiencies shall be paid punctually when due, as herein provided, notwithstanding the fact that Lessor may have received rental in excess of the monthly rental herein stipulated in previous months, and notwithstanding the fact that Lessor may thereafter receive monthly rental in excess of the monthly payments herein specified during subsequent months. No re-entry or taking possession of said premises shall terminate this Lease unless written notice of such intention is given to Lessee. Unpaid installments of rent or other sums shall bear interest at the highest legal rate from the date due.

26. **LESSOR'S LIEN.** If Lessee is in default under any covenant, term or condition of this Lease or has abandoned said premises, in addition to the rights of the Lessor under Paragraph 25, Lessee hereby grants to Lessor a lien upon any personal property or trade fixtures of Lessee in said premises which lien Lessor may satisfy by selling said personal property and trade fixtures at public or private sale without notice to Lessee and from the proceeds of said sale satisfy first any costs of storage, removal and sale and any other debts due from Lessee to Lessor and secondly, satisfy the total amount of unpaid rent due and hold any balance for the account of Lessee. This lien shall accrue to Lessor's benefit whenever Lessee is in default and when Lessor exercises any right, which Lessor may have at law or remedy which Lessor may have under Paragraph 25 hereof.

27. **PARTIAL AND TOTAL DESTRUCTION.** If a partial destruction of said premises or the building containing the same occurs during said term, arising out of risks covered by fire and extended coverage insurance or if said partial destruction damages exterior walls, roof or cement embedded non-accessible plumbing, which requires repairs to either said premises or said building, Lessor shall forthwith make such repairs required, provided such repairs can be made within 120 days, under the laws and regulations of authorized public authorities, but such partial destruction (including any destruction necessary in order to make repairs required by any such destruction) shall in no wise void this Lease, except that Lessee shall be entitled to a proportionate reduction of rent while such repairs are being made, based upon the extent to which the making of such repairs shall interfere with the business carried on by Lessee in said premises provided that in making such repairs Lessor shall be obligated to replace only such glazing as shall be damaged by fire and other damaged glazing shall be replaced by Lessee. If such repairs cannot be made within 120 days, Lessor may, at Lessor's option, make the same within a reasonable time, this Lease continuing in full force and effect and the rent to be proportionately abated, as in this paragraph provided; or if Lessor does not elect to make such repairs which cannot be made within 120 days, or such repairs cannot be made under such laws and regulations, this Lease may be terminated at the option of either party. In respect to any partial destruction, including any destruction necessary in order to make repairs required by any such destruction, which Lessor is obligated to repair or may elect to repair under the terms of this paragraph, the provisions of Section 1932, Subdivision (2), and Section 1933, Subdivision (4) of the California Civil Code are waived by Lessee. If said destruction or damage is sustained and occurs during the last six (6) months of the term of this Lease, Lessor at Lessor's option, may terminate and cancel this Lease. A total destruction of said premises (including any total destruction required by any authorized public authority) shall terminate this Lease.

28. **SURRENDER.** The voluntary or other surrender of this Lease by Lessee, or a mutual cancellation thereof, shall not work a merger, and shall, at the option of Lessor, terminate all or any existing sub-tenancies or may, at the option of Lessor, operate as an assignment to Lessor of any or all of such sub-tenancies.

29. **ATTORNEY'S FEES.** If either party to this Lease brings an action to enforce the terms hereof or declare rights hereunder the prevailing party in any such action shall be entitled to reasonable attorney's fees as fixed by the Court incurred in the trial or appeal of such matter.

30. NOTICE TO LESSEE. All notices to be given to Lessee including any notice referred to in Section 1162 of the California Code of Civil Procedure may be given in writing and served personally, or, by depositing the same in the United States mail, postage prepaid, and addressed to Lessee at said premises, whether or not Lessee has departed from, abandoned or vacated said premises, and any further or additional notice is hereby waived by Lessee.

31. NOTICE TO LESSOR. All notices to be given to Lessor shall be deemed given if and when mailed by registered mail postage prepaid, addressed to the address indicated below or such other address as Lessor may designate in writing.

32. SECURITY. If any security be given by Lessee to secure the faithful performance of all or any of Lessee's covenants hereunder this Lease, Lessor may transfer or deliver the security, as such, to the purchaser of the reversion, if the reversion be sold, and thereupon Lessor shall be discharged from any further liability in reference thereto. This paragraph shall be applicable only if a deposit by Lessor is specially designated as "security" in Paragraph 3.

33. WAIVER. The waiver by Lessor of any breach of any term, covenant or condition herein contained shall not be deemed to be a waiver of any subsequent breach of any term, covenant or condition hereof.

34. HOLDING OVER. If Lessee holds over after the termination of this Lease, Lessee shall become a tenant from month to month only upon each and all of the terms herein provided as may be applicable to such month to month tenancy and any such holding over shall not constitute an extension of this Lease. During such holding over, Lessee shall pay rent at the highest monthly rate provided for herein.

35. BINDING, MODIFICATION, ETC. This Lease shall be binding upon the parties hereto, their heirs, executors, administrators, successors and assigns; no assignee for the benefit of creditors, trustee, receiver or referee in bankruptcy shall acquire any rights under this Lease by virtue of this paragraph; this Lease may be modified in writing only. It constitutes the entire agreement of the parties who acknowledge that no oral or other representations have been made by themselves or any agent of either of them with respect to the condition of said premises or any obligation of the Lessor hereunder or otherwise. The parties agree to execute any documents necessary to carry this Lease and the short form thereof into effect.

36. AUCTIONS, SIGNS. Lessee shall not conduct or cause to be conducted any auction, fire, closing-out, going-out-of-business or bankruptcy sale on said premises or the appurtenances thereto without the prior, written consent of Lessor. Nor shall Lessee place any sign upon the exterior of said premises which may obstruct the sign of any other tenant of deface said premises.

37. BROKER'S COMMISSION. When this Lease is signed by both parties, Lessor shall pay ....

...., a licensed real estate broker, a leasing commission (of $..) for the consummation of this Lease. If said broker is a procuring cause of any renewal or extension of this Lease or the execution of a new Lease between the parties, then, regardless of the terms thereof Lessor shall pay said broker a leasing commission upon the consummation of any such transaction or transactions. If Lessee exercises any option hereunder (a) to continue to lease said premises or (b) to extend or renew this Lease or (c) to purchase said property or any part thereof, then, when such option is exercised, Lessor shall pay said broker either a leasing or a sale commission. All commissions shall be paid in accordance with the schedule of commissions of said broker. Lessor agrees to pay said commission on Lessor's behalf and on behalf of any person, corporation, or association that holds title to said real property or any part thereof when any commission is due hereunder. Said obligations to pay said commissions are hereby declared a covenant running with said real property in favor of said broker who is a third party beneficiary of the provisions of this paragraph which are declared binding on any owner of said real property or any part thereof.

38. RECORDATION OF SHORT FORM. Either party or said broker may record a short form of this Lease stating only that said real property has been leased on the date hereof and that any subsequent purchaser of said real property or any part thereof shall be bound by the commission provisions and all the terms hereof.

39. Paragraph headings are not part of this Lease.

THE PARTIES HAVE SIGNED THIS LEASE ON THE DATE SET OPPOSITE THEIR SIGNATURES

Dated	....
	....
....	....
Address for Notices	**Lessor**
Dated	....
	....
....	....
Address for Notices	**Lessee**

For these forms consult your A.I.R. Accredited Firm
or call or write the American Industrial Real Estate Assoc., 5720 Wilshire Blvd., Los Angeles, suite 200, Calif. 90036,
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16

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